

**COMMISSION OF THE EUROPEAN COMMUNITIES**  
Directorate-General for Fisheries

# **Regional, Socio-Economic Study in the Fisheries Sector**

**ITALIA**

Sicilia, Sardegna

**Document  
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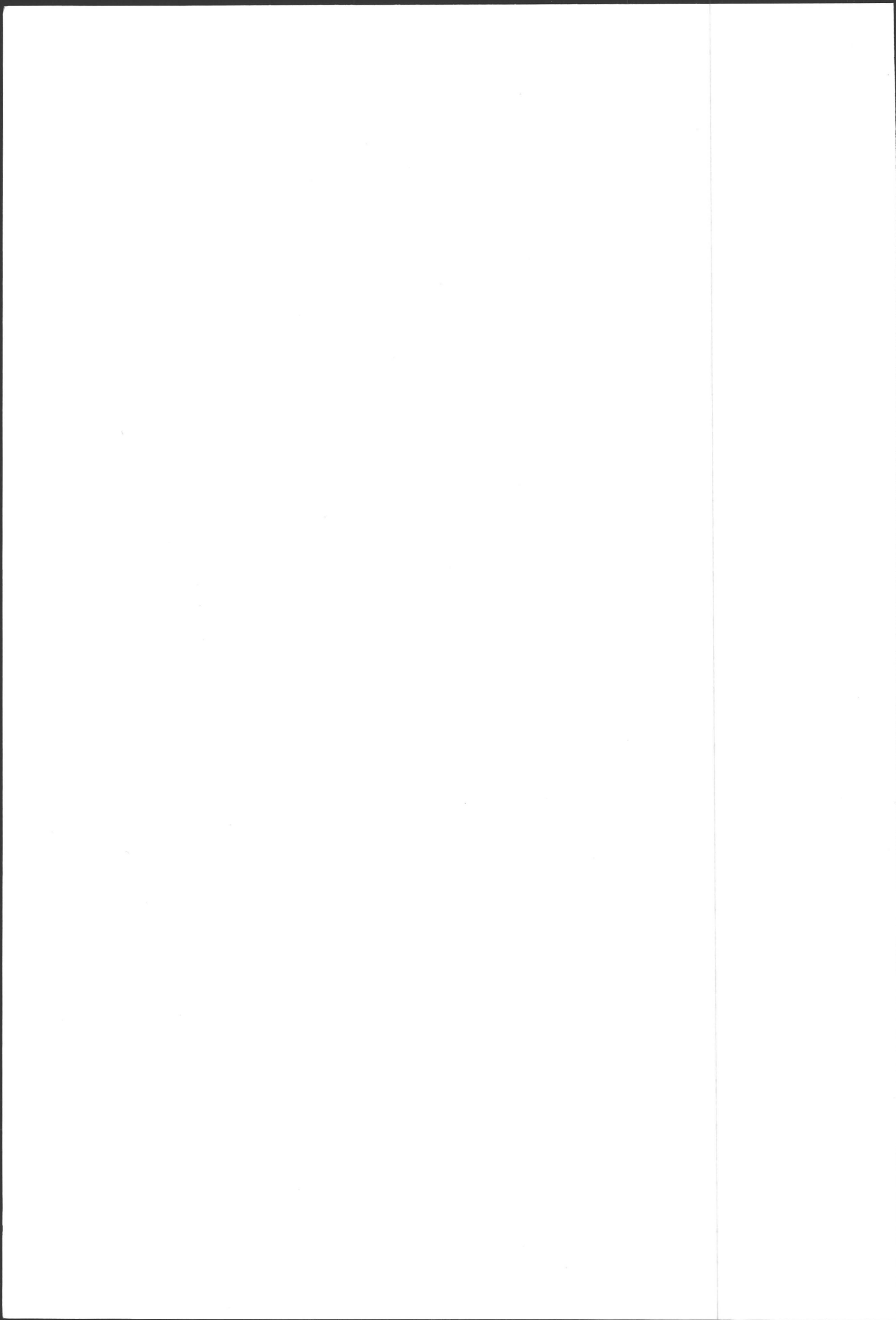
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## ABSTRACT

Lo studio concerne due regioni amministrative italiane (Sicilia e Sardegna) che presentano più di 3 300 km di coste, lungo le quali sono dislocati 244 punti di sbarco. La flotta peschereccia in attività si compone di 5 300 imbarcazioni, per un totale di 88 871 TSL; la forza lavoro comprende 15 950 marittimi (dicembre '89).

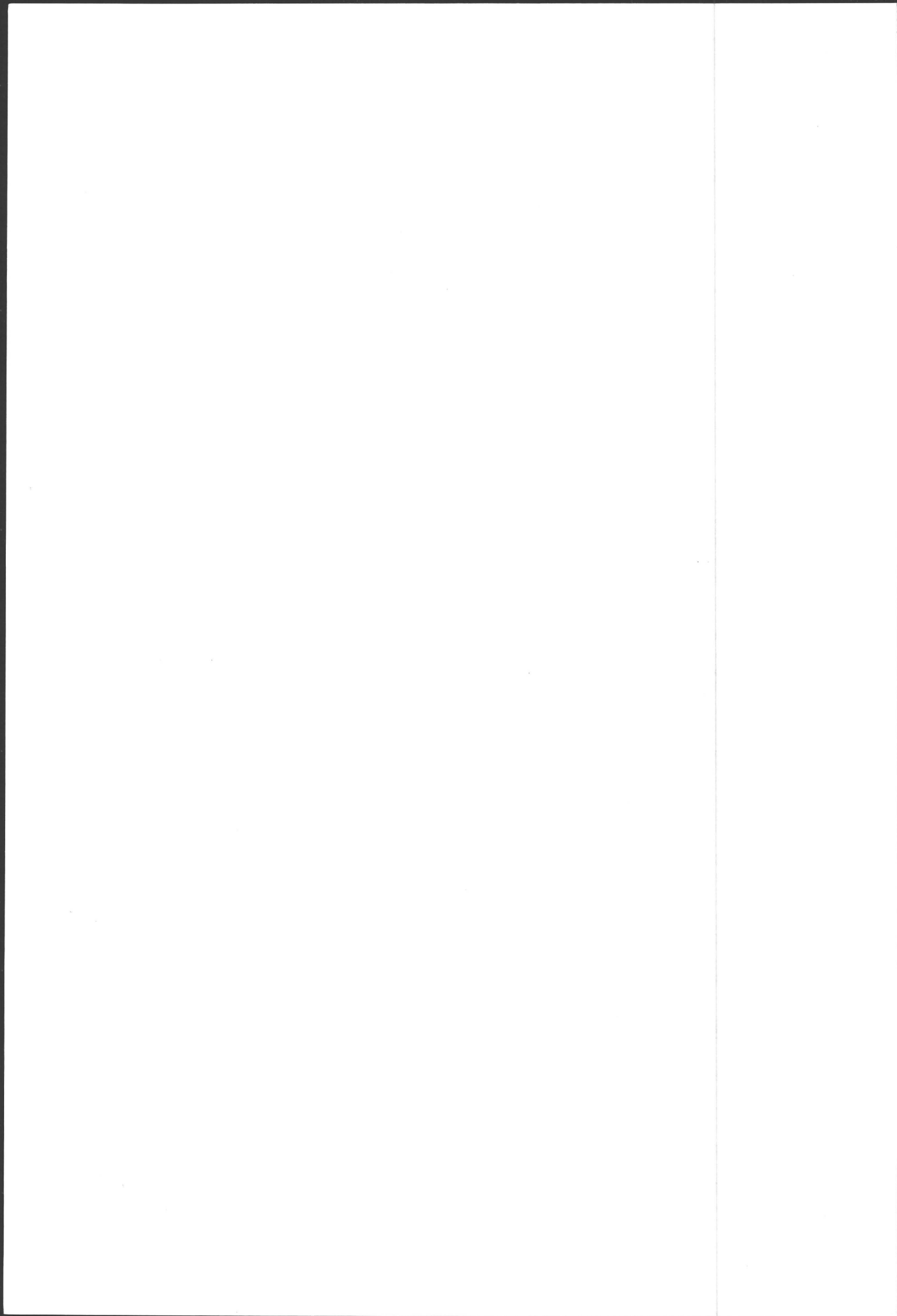
Il tipo di pesca predominante è quello praticato con pescherecci da traino. I battelli impiegati in tale comparto rappresentano rispettivamente il 64% della stazza lorda, il 76% delle catture ed il 66% delle vendite sull'intera zona in parola (86/87). Il potenziale produttivo locale dell'acquicoltura non viene pienamente sfruttato per problemi amministrativi e tecnici. L'acquicoltura della zona costituisce attualmente il 3% (in termini di volume) e 5% (in termini di valore) della produzione nazionale e dell'occupazione anche marginale. Quanto all'industria di trasformazione, non vi saranno miglioramenti della produzione e dell'occupazione fintanto che non verrà dato un nuovo orientamento alla politica strutturale e di mercato (PCP). Questo comparto dà lavoro a circa 8 100 persone, ma per il futuro si teme una progressiva riduzione di manodopera.

Vi sono 57 porti nazionali attrezzati per i pescherecci. Date le condizioni delle strutture portuali nell'area in esame, l'investimento necessario per attrezzare i porti di queste regioni ammonta a circa 46 Mio di ECU. Nella zona operano inoltre 16 mercati le cui dimensioni attuali costituiscono tuttavia un ostacolo all'incremento delle vendite e del livello di occupazione.

In termini di rapporti intersettoriali, i collegamenti diretti fra la pesca e le attività connesse si distinguono per la loro capillarità. L'occupazione totale indotta nell'insieme delle attività economiche connesse (250) ammonta a 3 700 unità (inclusi i commercianti al minuto) a fronte di 16 700 pescatori.

Non è possibile affermare che esistono in questa area "zone geografiche altamente dipendenti dalla pesca" che oltrepassino i confini delle unità amministrative locali (comuni) in cui sono svolte le attività di pesca, ad eccezione della provincia di Trapani (Mazara del Vallo). Si può tuttavia ragionevolmente supporre che tali zone siano distribuite un po' ovunque sull'arco dell'intera area e a cavallo delle singole regioni amministrative.

L'analisi suggerisce una politica degli investimenti volta ad ottenere lievi cambiamenti nella struttura del consumo intermedio e finale in altri settori, in modo da poter assorbire la prevista riduzione della forza lavoro impiegata nella pesca e nelle attività connesse. Eventuali misure dirette vanno integrate con la garanzia istituzionale e con la possibilità di ottenere finanziamenti per nuove forme organizzate di gestione e di servizi. È inoltre di fondamentale importanza che il reddito ricavato dall'occupazione alternativa sia pari o superiore a quello tratto dall'attività in mare; in caso contrario, qualunque programma di ridistribuzione delle risorse è destinato dall'inizio al fallimento.





## ABSTRACT

The area of study is composed by two Italian administrative regions (Sicily and Sardinia) which have more than 3,300 km of coastline, along which there are 244 landing places. The fishing fleet operating is composed of 5,300 boats with 88,871 GRT. The labour force was made up of 15,950 professional seamen (12/89).

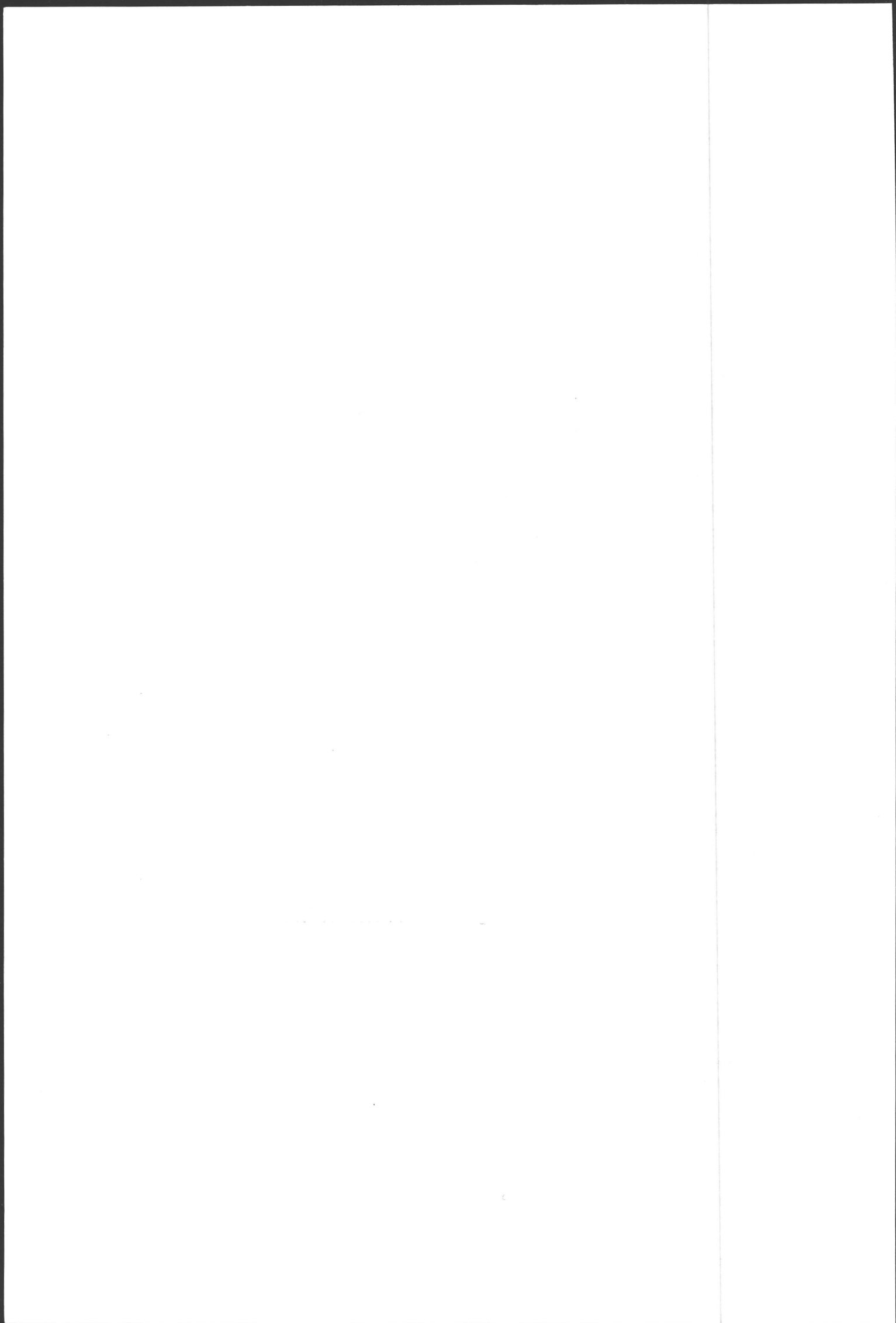
The catching sector is dominated by trawler fishing. Trawler boats account for 64%, 76% and 66% of GRT, catch and sales of the total area respectively (86/87). The area's productive potential of the aquaculture sector is not exploited to the full due to administrative and technology difficulties. Aquaculture current production in the area accounts for 3% (in terms of volume) and 5% (in terms of value) of the national totals and employment is also marginal. In the processing industry one observes that as long as structural and market policy (CFP) does not change direction, the sector cannot evolve in a positive manner both with regard to production and to employment. Around 8,100 people are employed in this subsector and one may expect a steady reduction in manpower in the industry in the future.

There are 57 national ports equipped for fishing boats. Given the conditions of samples ports structures in the area under study, the investment necessary to equip fishing ports comes to around 46 million ECU. There are also 16 fish markets operating in the area. Current dimensions of the structure of the fish markets represent an obstacle to increasing the quantities sold and the level of employment.

In terms of sectorial interrelations the direct links between fishing and related activities are distinguished by their "pervasiveness". The total induced employment in all (250) related economic activities account for 3,700 units (retailers included) related to 16,700 fishermen at sea.

In the area, one cannot assert that there exist "geographical zones highly dependent on fisheries" which go beyond the confines of the local administrative unit (comune) in which fishing is carried out, with the exception of the province of Trapani (Mazara del Vallo). It is not unreasonable to suggest that there are "zones highly dependent on fisheries" distributed across the entire area and across the individual administrative regions.

The analysis would suggest an investment policy directed towards a small change in the structure of intermediate and final consumption in other sectors, such as to absorb the expected reduction in the workforce employed in fisheries and ancillary activities. Any direct measure must be integrated with the additional institutional guarantee and the possibility of access to credit for new organisational forms of management and services. Furthermore, it is of fundamental importance that the income obtainable from the alternative occupation is equal to, or greater than, that earned at sea, otherwise any reallocation programme is doomed to failure from the outset.



## ABSTRACT

L'étude porte sur une zone comprenant deux régions administratives italiennes (la Sicile et la Sardaigne) qui comptent plus de 3.300 km de côtes, le long desquelles se trouvent 244 lieux de débarquement. La flotte de pêche y comprend 5.300 bateaux totalisant 88.871 TJB. La main-d'oeuvre y comptait 15.950 marins professionnels en décembre 1989.

La pêche est assurée essentiellement par des chalutiers qui représentent 64 % des TJB, 76 % des captures et 66 % des ventes de la zone (86/87). Le potentiel de production de l'aquaculture n'y est pas exploité intégralement en raison de difficultés administratives et technologiques. La production aquacole actuelle y représente 3 % (en volume) et 5 % (en valeur) des totaux nationaux et l'emploi est également marginal. Dans le secteur de la transformation, on observe qu'à défaut de changement des politiques structurelles et de marché (PCP), ni la production, ni l'emploi ne pourront se développer. Environ 8.100 personnes travaillent dans ce sous-secteur et on peut s'attendre à une réduction continue de la main-d'oeuvre.

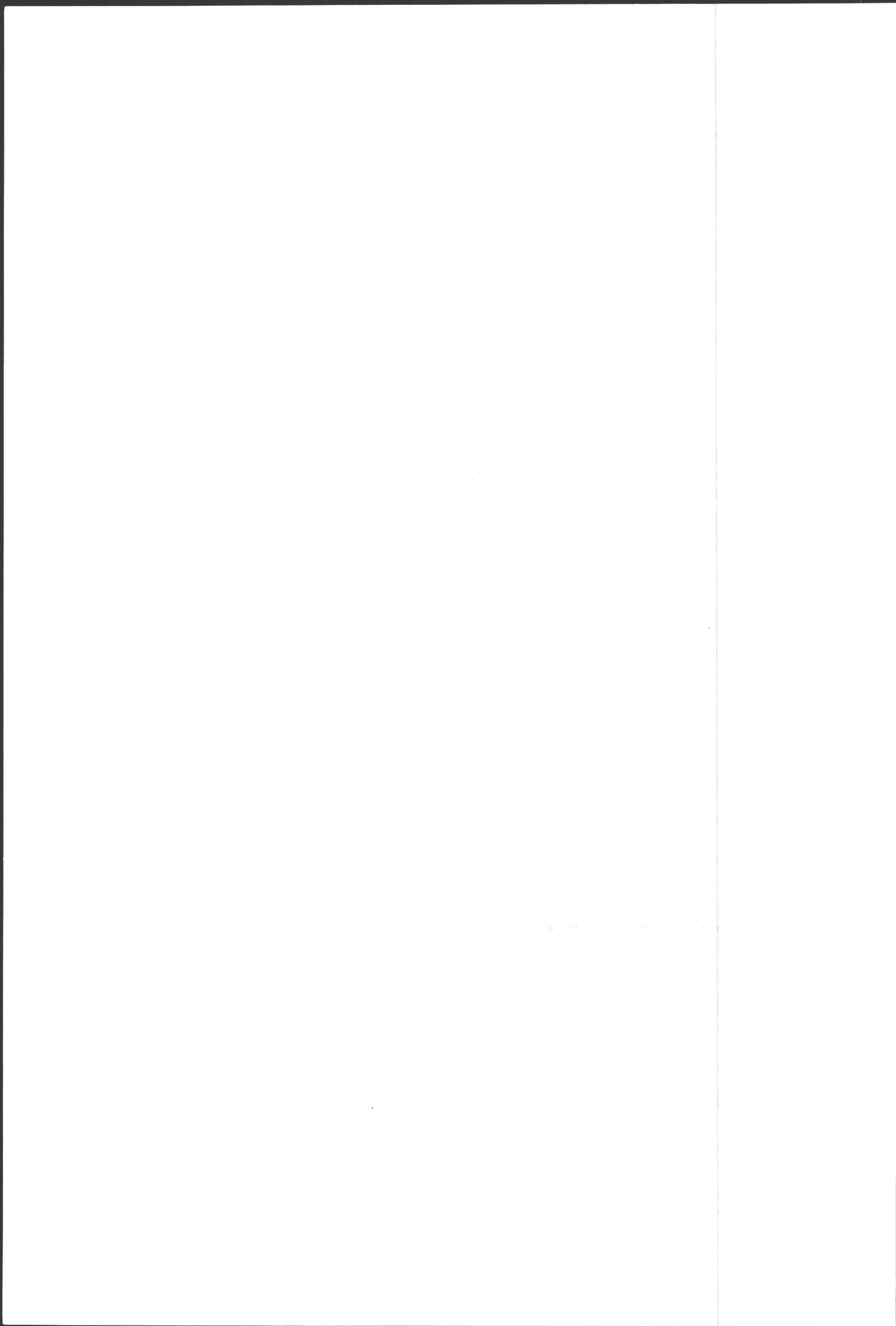
Il existe 57 ports nationaux équipés pour les bateaux de pêche. Compte tenu de l'état des simples infrastructures portuaires de la zone étudiée, l'investissement nécessaire pour équiper les ports de pêche s'élève à près de 46 millions d'écus. Il existe également 16 criées dans la zone. Leurs dimensions actuelles constituent un obstacle à l'augmentation des ventes et de l'emploi.

En termes de corrélations sectorielles, les liens directs entre la pêche et les activités connexes sont très importants. Au total, on compte 3.700 emplois induits dans l'ensemble des activités économiques connexes (250) pour 16.700 dans la pêche maritime.

On ne peut pas affirmer qu'il y a "des zones géographiques fortement dépendantes de la pêche" qui dépassent les limites de l'unité locale administrative (commune) où la pêche est pratiquée, à l'exception de la province de Trapani (Mazara del Vallo). Il n'est pas déraisonnable de penser qu'il existe "des zones fortement dépendantes de la pêche" çà et là dans la zone et les différentes régions administratives.

L'analyse préconise une politique d'investissements orientée vers une légère modification de la structure des consommations intermédiaire et finale dans d'autres secteurs, de manière à absorber la réduction prévue de la main-d'oeuvre employée dans la pêche et les activités auxiliaires. Toute mesure directe devrait être assortie d'une garantie institutionnelle et d'une possibilité d'accès au crédit pour les nouvelles entités de gestion et de services. En outre, il est essentiel que le revenu potentiel procuré par les emplois de remplacement soit égal ou supérieur à celui tiré de la pêche, sinon tout programme de reconversion est voué à l'échec dès le départ.

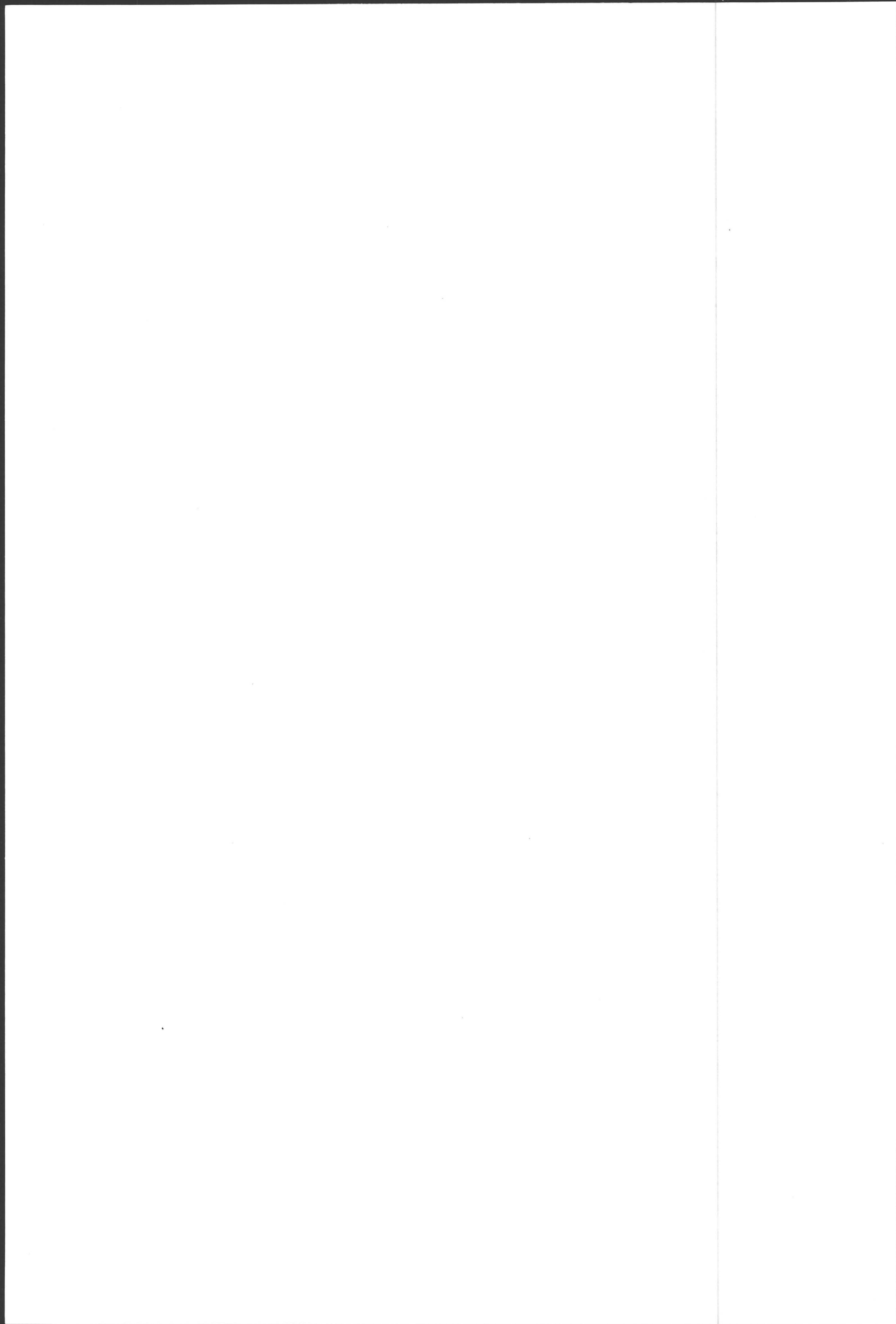




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# GENERAL DESCRIPTION OF THE AREA OF STUDY

The two Italian administrative regions (Sicilia e Sardegna) which are considered in this study have more than 3,300 km of coastline, along which there are 244 landing places. The Italian fishing sector is characterised by the large number of landing sites and their nearness to each other (roughly 14 km). The fishery has much diversity both in terms of the peculiarities of the local fleets and the equipment (gears) employed. In this context, the analysis cannot but draw attention to the geographical distribution of the fleet and the different types of fishing gear employed (see table 1.A and fig. 1.1).

To this end, the study has been conducted using all the available sources of information at differing levels of geographical and technical disaggregation. The most recent ISTAT (Central Statistical Institute) statistics provide a picture of the geographical location of the fleet. As regards information connected to the different fishing techniques and the related economic analysis, data was employed from IREPA studies and, in particular, from the systematic compilation of fishing indicators commissioned by the Italian Ministry for the Merchant Navy.

The data set employed, if not always strictly homogeneous, provides as complete a picture as is possible of the current state of fishing in the area considered. No data were available for part-time employees.

TAB. 1.A		FISHING ACTIVITY IN AREA I.3 - 1989																	
MARITIME DISTRICT AND COAST	BOTTOM TRAWLER		PELAGIC TRAWLER		PURSE-SEINER		LONG - LINER		GILL-NET		DREDGER		OTHER METHODS		MULTIPLE PURPOSE VESSEL		TOTAL		
	N.	GRT	N.	GRT	N.	GRT	N.	GRT	N.	GRT	N.	GRT	N.	GRT	N.	GRT	N.	GRT	
MESSINA	8	373	-	-	11	124	10	39	97	348	2	5	24	310	536	3102	688	4301	
PALERMO	84	2989	-	-	105	675	20	44	196	436	1	4	11	166	665	4369	1082	8683	
TRAPANI	28	759	-	-	18	832	42	648	124	464	-	-	27	139	230	4050	469	6891	
MAZARA D.V.	231	31129	-	-	1	12	36	179	44	227	-	-	-	-	20	680	332	32228	
PORTO EMP.	283	9987	-	-	17	643	58	302	133	458	-	-	25	226	52	1399	568	13016	
SIRACUSA	92	3150	-	-	3	110	8	62	43	83	1	2	6	57	332	2834	485	6299	
AUGUSTA	-	-	-	-	1	37	16	140	8	44	-	-	1	3	59	630	85	854	
CATANIA	14	63	-	-	4	120	38	965	101	562	2	12	8	28	230	4511	397	6261	
SICILIAN	740	48450	-	-	160	2554	228	2379	746	2622	6	23	102	928	2126	21574	4106	78531	
OLBIA	19	641	-	-	-	-	1	1	85	289	-	-	10	76	122	670	237	1876	
PORTO TORR.	30	1021	-	-	4	236	8	24	132	507	1	3	7	58	179	840	361	2689	
CAGLIARI	132	3158	-	-	1	10	1	25	284	1175	-	-	4	22	174	1386	596	5775	
SARDINIAN	181	4820	-	-	5	245	10	50	501	1972	1	3	21	155	475	3095	1194	10340	
TOTAL ITALY		3834	143745	86	5287	434	12854	474	3351	5198	17778	527	5217	769	4430	7111	70502	18433	263164
Source: I.S.T.A.T.																			

**FIG. 1.1 AREA I.3 BY ADMINISTRATIVE REGIONS AND PROVINCES**



## CHAPTER 1 DESCRIPTIVE ANALYSIS OF THE SECTOR IN AREA "I.3"

### 1.1 THE FISHING FLEET

#### 1.1.1 The current state of the fishing fleet

The fishing fleet in area I.3 operating on December 31, 1989, was composed of 5,300 boats with the total gross tonnage of 88,871. The labour force was made up of 15,950 professional seamen corresponding to of the respective national total.

Gross sales were ~424,000 thousands ECU which, net of intermediate goods, gave a value added equal to 302,779 thousands ECU (see table 1.1.1 and 1.1.2).

When compared to the national situation the fleet of the two isles presents a number of points of difference. Indeed, on one hand the structure of the fleet make up 34% of the relevant national totals whilst, on the other, the proceeds and their manpower make up 29%, and the volume caught make up 26% of the national totals respectively. Figures of volumes of landing by species in the administrative regions and total area are reported in table 1.1.3. Landing by gears per regional coastal are reported in table 1.1.3A and the prevailing captures by species and gears in the area are drafted in fig. 1.1.3.

#### 1.1.2 Types of fishing gear

Sea fishing in Sicily is characterised by the presence of the industrial fleet from Mazaro del Vallo which operates in the Sicilian Channel. The Sardinian fleet is made up entirely of typically Mediterranean boats and an exclusively artisanal organisational structure. In this context, the exploitation of fishing resources requires the organisational flexibility that an artisanal structure ensures in order to be economically viable. Indeed the artisanal boats exploit, on one hand, the capability to adapt equipment to the seasonality of the species fished and, on the other, the ability to operate at gross receipts levels of ~150,000 ECU.

According the results of the IREPA's sample survey (1986/87 and 1989), tables 1.1.4 and 1.1.5 provide some statistics on the fishing gears employed and their cash. In this context statistics are not consistant with official data for the same years.

Trawlers are the most common form of vessels used for fishing along the isles coasts. These boats account for ~64% of the gross tonnage of the area. The importance of trawling is further reinforced when one considers that many of the boats included in the multiple purpose category frequently trawl. The IREPA observatory reports that during 1987 on average trawling accounts for ~76% of the total catch. The fish caught in this way are of variable quality and mostly fall into the category of "other fish". Crustacea and molluscs make up, in roughly equal measure, the rest of the catch. Proceeds of this group make up ~66% of the area's total.

The average trawling operator is characterised by gross



sales of 145,100 ECU and operating costs equal to 45% of the total. Labour costs, principally the salaries of the boats' crews come to 36% of sales leaving a profit margin of 19%. The average boat owner is also part of the crew and earns roughly 28,000 ECU per annum made up of the profits and his salary as a crew member.

Boats employing purse-seiner gears make up only 3% of gross tonnage operating along the area. Purse-seiner fishing is characterised by its markedly seasonal nature and by a good level of technical efficiency (over 2,732 kg/GRT, in 1987). Indeed, purse-seiner fishing accounts, on average, and with a high degree of year to year variation, for 5% of the area's total catch. Two-thirds of the fish caught are small pelagic species, mainly sardines and anchovies and, given the low price of these species, the contribution of the group to sales is brought down to 3%.

In spite of this, the average annual income of a boat owner, who is also a crew member, is around 29,000 ECU, the highest income of all fishing methods in the area. This is due to the low operating costs which make up 27% of sales. The remaining value added, necessary to pay crews and to reward capital are high. Crew salaries make up 34% of the total whilst 39% goes in the way of profits and depreciation costs (see tables 1.1.4 and 1.1.5).

The gill-netters and long-liners groups are the most traditional method employed by Italian fishermen. It makes up 9% of the area's tonnage, and this value is very close to the national average of 7%.

Gill-netters account for 6% of the catch and 10% of sales. The difference between the two figures depends on the fact that the target of gill net fishermen is largely composed of high value of species and the sale of which to final consumers is often carried out by the fishermen themselves. The average income of fishermen in this category is around 13,000 ECU per annum although there are marked regional differences in this figure.

Fishing is usually undertaken by the boat owner alone. Sometimes an additional person is taken on board, although the remuneration of such "crew" makes up just 26% of sales. Rather more important are the operating costs of which social contributions make up a substantial part. Overall, these costs account for 35% of total sales, the highest percentage of all fishing methods considered.

Finally, profits reach a high level, equal to 29% of sales. However, in absolute terms, incomes are at the limit of what is economically and socially viable (13,000 Ecu). This is due to, apart from the technical characteristics of the method, the presence in the area of trawlers which substantially reduce the availability of fish (see tables 1.1.4 and 1.1.5).

Boats employing multiple purpose gears make up the second largest group in terms of tonnage, accounting for 21% of the total. At the local level, these are characterised by a high degree of technical, economic and social heterogeneity.

The impact of this type of fishing gear is estimated as 12% of the catch and 19% of gross sales which, on average, is equal to 64,700 ECU per boat. Sales are divided up as follows: 29% go

on operating costs, 46% on labour and boat owners receive, on average, around 17,530 ECU (see tables 1.1.4 and 1.1.5).

The modernisation of the fleet, through the restructuring of hulls and engines and the reduction in the intensity of fishing are the principal objectives adopted in Italy for the period 1992-1994. The modernisation of the fleet was necessary since the average age of boats in the Italian fleet is around 20 years, most of which were constructed before the mid-1970's. Similarly, in the area under study, 63% of the boats - corresponding to 67% of GRT- are over 15 years old and 51% of boats - 48% of GRT- were constructed over 20 years ago. Just 19% of the fleet - 21% of GRT - has been constructed in the last ten years and over a third in the last fifteen (table 1.1.6).

Accordingly, maintenance work has become the means to counteract the obsolescence of the fleet. The IREPA (1985) observatory reports that around one half of boats have been renovated in at least one of their principal components. If, on the one hand, renovation has, for the most part, taken the form of the substitution of engines, on the other, lately there has been a change in direction. Indeed, in recent years, even if almost half the fleet has changed its engine, more emphasis is beginning to be put on the modernisation of preservation and electronic equipment. This phenomenon may be understood in relation to the necessity to improve the quality of fish brought ashore in order to receive better prices for the catch and the need to improve fishing efficiency in the light of the reduction in the stock of fish available.

As regards the reduction in fishing intensity through a reduction in the overall tonnage and the KW of engines, it is worth noting that the objectives specified in the 1987-1991 orientation programme were, for the part, achieved.

In this context, the current directives envisage modest reductions in tonnage and engine power with a particular concentration on the reduction of the fishing intensity of trawlers. Indeed, these boats represent the largest component of the fleet (in terms of fishing hours, tonnage and horsepower) and are the fishing subsector most in need of rationalisation.

In this sense, the current regulations, whilst leading to a reduction in the tonnage of trawlers have not exhausted their role. In particular, current policies points to the necessity of reallocating boats employing inefficient fishing methods to more efficient ones.

Technological innovation adopted in the area has been concerned with the mechanisation of net hauling and the preservation of the catch. Little or nothing has been done to maintain the sector's dwindling workforce (particularly the young) caused by the poor working conditions facing, above-all, the non-boat owning crew members.

A first step towards overcoming this problem would be an acceleration of the process of renewal of the fleet in order to both improve working conditions and increase the earnings of individual boats. Organisationally, this implies a reallocation

of the fleet between the various fishing gears. From this point of view, the reduction of the trawling fleet in the area is one of the main priorities. In this way, a reallocation of the fleet will benefit both the stock of fish and the earnings of fishermen.

TAB. 1.1.1	STATISTICS ON FISHING ACTIVITY IN AREA I.3 (1989)			
AREA I.3	N.	GRT	FISHERMEN	CATCH (tons.)
Sicilia	4,106	78,531	12,832	77,885
Sardegna	1,194	10,340	3,118	16,955
AREA I.3	5,300	88,871	15,950	94,840
ITALY	18,433	263,164	54,450	360,963
Source: I.S.T.A.T.				

TAB. 1.1.2	AREA I.3: FINANCIAL DATA ON THE FLEET BY REGION (’000 ECU - 1989)			
	REGIONS	PROCEEDS	COSTS	GVA
	Sicilia	345,900	103,423	244,047
	Sardegna	78,080	19,703	58,731
	TOTAL I.3	423,981	123,126	302,779
	TOTAL ITALY	1458,848	402,067	1063,401
Source: ISTAT				

TAB. 1.1.3  
LANDINGS VOLUMES BY SPECIES AND ADMINISTRATIVE REGIONS IN AREA I.3 (tons) - 1989

SPECIES	SICILIA	SARDEGNA	AREA I.3	TOTAL ITALY
1 Anchovy	600,1	24,9	625	18861,6
2 Sardine	2309,6	788,2	3097,8	45681,3
3 Mackerel	585,3	211,6	796,9	3991,7
4 Tuna	786	236,2	1022,2	2381,4
5 Horn fish	52,8	6,6	59,4	421,7
6 Eel	3,4	209,2	212,6	866,8
7 Frigate mackerel	118,2	30,2	148,4	489,7
8 Bogue	595,1	446,3	1041,4	4956
9 Gurnard	2767,6	304,4	3072	5818,9
10 Mullet	212,5	696,4	908,9	4719,4
11 Grouper	1524,7	135	1659,7	3347,9
12 Dogs teeth	1543,1	233,1	1776,2	4458,8
13 Gobby	246	220,9	466,9	2315,3
14 Sand smalt	166,3	84,1	250,4	2301,1
15 Garrick	209	240,6	449,6	1562,4
16 Cockrel	273,8	245,9	519,7	1493,6
17 Hake	16843,3	319,8	17163,1	25376,4
18 Croakar	70,9	101,5	172,4	1510
19 Gilthead seabream	82	287,5	369,5	2285,1
20 Red seabream	247,5	252,2	499,7	2948
21 Bonito	241,7	146,2	387,9	1315,9
22 Smooth hound	2699,4	88,1	2787,5	4733
23 Blue whiting	270,1	579,5	849,6	2606,6
24 Sword-fish	1505,4	53,5	1558,9	2210,9
25 Angler	1562,5	140,3	1702,8	2756,1
26 Ray	1461,8	285,4	1747,2	2809,1
27 Turbot	186,2	135,9	322,1	2928,9
28 White bream	357,4	244,4	601,8	2236,9
29 Sole	1707,1	217,1	1924,2	5953,2
30 Sea bass	104,1	303,7	407,8	3010,2
31 Horse mackerel	1939,8	381,9	2321,7	8719,2
32 Red mullet	3484,9	742,5	4227,4	9283,8
33 Other species	7058,3	2576,8	9635,1	41805,9
34 Squid	1959,8	402	2361,8	8649,1
35 Octopus	3927,2	698,9	4626,1	11595,9
36 Cuttlefish	1792,6	530,2	2322,8	11005,4
37 Mussel	407,5	2625,4	3032,9	19748,3
38 Horned octopus	601,4	76,7	678,1	2375,3
39 Squid-Todarodes	2539,1	225,2	2764,3	8365,5
40 Clam	93,2	279,1	372,3	28919,6
41 Other species	3120,8	439,3	3560,1	19596,9
42 Lobster	121,3	82,4	203,7	761,6
43 White shrimp	7646,1	100,5	7746,6	9177,7
44 Red-shrimp	1369,4	110,4	1479,8	3091,6
45 Squilla mantis	85,4	7,9	93,3	3476,1
46 Norway lobster	1898,5	80,6	1979,1	3982,4
47 Other species	506,2	326,6	832,8	4060,7
GENERAL TOTAL	77884,4	16955,1	94839,5	360962,9

Source: I.S.T.A.T.

TAB. 1.1.3A - LANDINGS BY GEARS AND BY ADMINISTRATIVE REGIONS IN AREA I.3  
(VOLUME IN TONS, X TOTAL ITALY = 100)

REGIONS	TRAWLER		PURSESEINER		GILLNETTER		OTHERS		POLYVALENT		TOTAL	
	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%
SICILIA	92366	17,94	6262	1,22	4404	0,86	1143	0,22	14206	2,76	118381	23
SARDEGNA	17528	3,41	1212	0,24	3691	0,72	773	0,15	2953	0,57	26157	5,09
AREA I.3	109894	21,35	7474	1,46	8095	1,58	1916	0,37	17159	3,33	144538	28,09
TOTAL ITALY	271935	52,83	53678	10,43	39172	7,61	66890	13	83056	16,14	514731	100

Source: Sample survey IREPA (1987)

6

FIG. 1.1.3 ITALIAN CAPTURES MATRIX BY GEARS AND SPECIES

	s p e c i e s																																														
gears	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
trawler																																															
purse seiner																																															
gill net - longlin.																																															
others																																															
multiple purpose																																															

note: see table 1.1.3 for the species name

source: IREPA



TAB. 1.1.4		AREA I.3: DATA ON THE FISHING FLEET BY TYPE OF GEAR (1986/87)			
TYPE OF VESSEL	GRT	CATCH mt	CATCH/GRT kg	PROCEEDS Ecu '000	PROCEEDS/GRT Ecu '000
	(a)	(b)	(c) = (b/a)	(d)	(e) = (d/a)
Trawler	58,841	109,894	1,868	365,110	6.205
Purseseiner	2,736	7,474	2,732	14,552	5.319
Gillnetter	8,623	8,095	938	54,618	9.567
Others	2,610	1,916	734	10,315	3.952
Polyvalent	19,819	17,159	866	105,632	5.330
TOTAL I.3	92,633	144,538	1,560	550,227	5.940
TOTAL ITALY	263,606	514,731	1,953	1624,759	6.164
Source: (a) based on ISTAT figures; (b) and (d) IREPA's Fishing Fleet Observatory					

TAB. 1.1.5		AREA I.3: SAMPLE AVERAGE PROFITS AND COSTS BY FISHING GEAR (ECU 1989)			
ITEM	TRAWLER	PURSESEINER	GILLNETTER	OTHERS	POLYVALENT
GROSS RECEIPTS	145,100	100,600	32,470	-	64,700
% RUNNING COSTS	45	27	35	-	29
% LABOUR COSTS	36	34	26	-	46
% PROFITS (1)	19	39	39	-	25
AVERAGE OWNER EARNING	28,200	29,270	13,260	-	17,530
Source: IREPA's Fishing Fleet Observatory					
(1) Depreciation costs not included					



TAB. 1.1.6		REGIONAL DISTRIBUTION OF THE FLEET BY AGE OF VESSELS (NUMBER AND GRT) - AREA I.3							
ZONE	0-4	5-9	10-14	15-19	20-24	> 25	UNKNOWN	%	TOTAL
SICILIA	342	474	535	545	681	1348	181	77	4106
SARDEGNA	67	131	177	109	160	533	17	23	1194
% A I.3=100	9	11	13	12	16	35	4	100	-
TOTAL NUMBER	409	605	712	654	841	1881	198	-	5300
SICILIA	8437	8708	8045	16085	15673	20608	975	88	78531
SARDEGNA	777	792	1302	862	1609	4951	47	12	10340
% A I.3=100	10	11	11	19	19	29	1	100	-
TOTAL GRT	9214	9500	9347	16947	17282	25559	1022	-	88871
Source: Our processing on I.S.T.A.T. data '89									

## 1.2 AQUACULTURE

### 1.2.1 The principal productive sectors

Aquaculture has developed following the national pattern. During the 1970's, emphasis was still placed on the breeding of fish in "fish valleys" which today cover 7,463 hectares. In 1990 there were 29 establishments of which, 15 were dedicated to mussel farming. These establishments produced 3,850 tonnes of mussels corresponding to a value of more than 3.5 million ECU.

Trout production is insignificant, due to the marked preference of consumers for other types of fish. The production of euryhaline species, reared in salt or brackish water, has been developed primarily with the farming of sea bass and sea bream, and only marginally with eel farming. Ten establishments producing euryhaline species are registered with API (the Italian association of fish farmers) producing 575 tonnes worth around 9 million ECU.

In this context, traditional eel production is simply a residual category without contributing substantially to the area's production as is the case in other parts of Italy (see tables 1.2.1, 1.2.3., 1.2.4 and 1.2.5).

### 1.2.2 Mussel farming

Mussel farming is undertaken in sheltered areas with an average level of eutrophy. In area I.3, there are 15 establishments producing around 4,000 tonnes for a value of 3,1 million Ecu.

Mussel production is almost entirely destined for the domestic fresh fish market with a small percentage going to the processing industries. In particular, supply is sufficient to entirely satisfy demand in the spring and summer periods, whilst in the autumn and winter months, the high demand is mostly satisfied by imports.

The simplicity of cultivation techniques has allowed the wide diffusion of mussel farming. The productive model employed in the area is of two types: fixed and floating. The first is found in areas characterized by shallow water in which the Mussel-lines are attached to poles sunk into the sea-bed. The second method employs a cable kept on the surface by buoys to which are attached the Mussel-lines.

In general, the establishments are organised as cooperatives and provide a viable alternative to crewing on fishing boats.

The establishments cover a minimum area of 1,500 square metres and the sector has developed in areas traditionally dedicated to this activity, and thus enterprises are able to exploit the existing technology.

### 1.2.3 The farming of euryhaline species

There are ten establishments in the area farm euryhaline species. The majority of these rear sea bass and sea bream. Eel

farming, even if traditionally linked to "vallicultura", has a very limited role with farms situated only in Sicily.

Current production of euryhaline species by establishments situated in the two islands is 575 tonnes, concentrated mainly in Sicily which is the principal producer in area I.3. In fact, the island accounts for 73% (in terms of volume) and 76% (in terms of value) of the area's production.

Sicilian establishments have recently developed intensive farming techniques on eel farmers. In 1990, regional production reached 55 tonnes destined principally for the domestic market which is characterised by the seasonal nature of demand, concentrated around the Christmas period. At the organisational level, the traditional family-run farm is characterised by modest physical dimensions (covering an average area of two hectares) and limited access to credit and new technology. The fattening-up of "glass eels" and "yellow eels" bought from other fish farmers is carried out without the aid of sophisticated equipment.

The farming of sea bass and sea bream is a productive sector going through a phase of growth. The diffusion of farming techniques has favoured the development of establishments specialised in the rearing of the more valuable species. Currently there are eight establishments in the area; four in Sardinia and four in Sicily. The productive capacity of the area's farms is 330 tonnes of sea bass and 138 tonnes of sea bream. In particular, Sicilian production has reached 280 tonnes of sea bass and 88 tonnes of sea bream. These quantities make Sicily an important producer of these species at a national level.

Currently, there are three fish hatcheries operating in Sicily with a productive capacity of 1,150,000 newly hatched fish. However, these are not sufficient to fulfill the requirements of the fish farmers.

The market for both types of fish have the similar characteristics. 80% of production is sold directly to wholesalers whilst the rest goes to restaurants. Export of these species is virtually non-existent, conversely the importation of these types of fish from other Mediterranean countries is carried out on a massive scale. The price of imported fish is highly competitive in relation to the internally produced stock. As a result, the reduction in the risk faced by producers in this sector is subordinated to the need to reduce costs of production and the costs of the supply of newly hatched fish.

Employment in productive activity is relatively low. Indeed, on the larger farms, which are typically joint-stock companies, the average number of employees is 7. In the case of the smaller family enterprises, for whom fish farming is not the principal activity, there are no more than 4 employees for each productive unit.

TAB. 1.2.1 REGIONAL DISTRIBUTION OF FISH FARMING ESTABLISHMENTS IN AREA I.3 (1990)						
ZONE	TROUTS	EURYHALINE SPP.	MUSSELS	OTHERS	SUB TOTAL	VAL.LI (IIA)
SICILIA	2	6	10	.	18	1045
SARDEGNA	1	4	5	1	11	9564
SUB TOTAL I.3	3	10	15	1	29	10609
TOTAL ITALY	562	185	280	258	1285	63485
Source: A.P.I. (Associazione Piscicoltori Italiani)						

TAB. 1.2.3 REGIONAL PRODUCTION OF EURYHALINE SPECIES BY INTENSIVE METHODS IN AREA I.3 (TONS. 1990)					
ZONE	SEA BASS	SEA BREAM	WHITE BREAM	EEL	TOTAL
SICILIA	280	88	52	-	420
SARDEGNA	50	50	.	55	155
TOTAL I.3	330	138	52	55	575
Source: I.R.E.P.A. estimate					

TAB. 1.2.2 REGIONAL DISTRIBUTION OF AQUACULTURE AND VALLICULTURE PRODUCTION IN AREA I.3 (TONS. 1990)					
ZONE	TROUTS	EURYHALINE SPP.	MUSSELS	OTHERS	TOTAL
SICILIA	20	420	650	.	1.090
SARDEGNA	15	155	3.200	10	3.380
SUB TOTAL I.3 (a)	35	575	3.850	10	4.470
TOTAL ITALY (b)	35.000	1.900	95.000	650	132.550
Source: (a) I.R.E.P.A. estimate (b) I.C.R.A.P.					

TAB. 1.2.4 REGIONAL DISTRIBUTION OF AQUACULTURE PRODUCTION IN TERMS OF VALUE IN AREA I.3 (1990)				
ZONE	TROUTS	EURYHALINE SPP.	MUSSELS	TOTAL
	ECU	ECU	ECU	'000 ECU
SICILIA	56.386	6.598.478	639.260	7.294
SARDEGNA	42.617	2.042.355	3.147.128	5.232
SUB TOTAL I.3 (a)	99.003	8.640.833	3.786.388	12.526
TOTAL ITALY (b)	104.904.275	64.122.738	84.906.897	253.934
Source: (a) I.R.E.P.A. estimate (b) I.C.R.A.P.				

TAB. 1.2.5 AREA I.3: EMPLOYMENT IN AQUACULTURE BY REGION						
ZONE	TROUT	EURYHALINE SPP.	EEL	MUSSELS	OTHERS	TOTAL
SICILIA	8	28	8	.	.	44
SARDEGNA	4	28	.	15	3	50
TOTAL I.3	12	56	8	15	3	94
Source: I.R.E.P.A.						

## 1.3 THE FISH PROCESSING INDUSTRY

### 1.3.1 Overview of the fish processing industry

The structure of the industry concerned with processing fish is divided into differentiated sections. On the one hand there is a section consisting of small-scale artisanal production while on the other there is a truly industrial sector.

The latter, in line with the general strategy of industrial concentration characterising the entire foodstuffs industry, is going through a process of concentration based both on commercial strategy (the acquisition of bigger market shares in certain products) and financial strategy (the buying up of existing productive units with diversified lines of production). The phenomena of the specialisation and the vertical integration of production is increasingly evident.

Quite apart from the economic consequences of these developments, one observes a slow process of restructuring and rationalisation which cannot but have an important influence on the future development of, and employment in, the sector. The driving force behind these changes are trends in consumption subject to the constraints of providing primary goods, international trade and tariff and regulatory policy.

On the basis of data produced by ANCIT, domestic consumption in Italy in 1990 was 1384 million ECU. When compared with the corresponding total for 1983 of 530 million, this figure gives us a precise measure of the important role played by consumption in the sector. The figure for domestic consumption is comprised of 945 million ECU spent on domestic production (equivalent to 144300 tonnes) added to 439 million ECU of net imports. Exports equal to 56 million ECU represent 10% of the normalised balance of payments and are equally insignificant when seen against the imports of 495 million ECU. Furthermore, to the cyclical nature of exports is added the trend towards growth in imports (see table 1.3.1).

The progressive liberalisation of the Community market, following the end of the period of protectionism in 1985, has given a stimulus to the import of both raw materials and goods for final consumption to such an extent that it is now at a level of 52% of domestic production and 36% of total consumption. Furthermore, the enhanced competitiveness of imported products has slowed down price increases to such an extent that these no longer cover increases in the cost of labour on the domestic market.

Even so, sustained by increased consumption, domestic production continues to grow steadily (at an average rate of 10% p.a.). Around 6,800 people work in the industrialised part and over 1,300 are employed in the artisanal segment. As is well known, however, overall employment depends on the degree of capacity utilisation of the industry which, in the case under consideration, is relatively low with respect to other industrial sectors and has been in steady decline since 1987, reaching an all time low of 58% in 1990. Therefore, *ceteris paribus*, one may expect a steady reduction of manpower in the industry in the future (see table 1.3.1).



With regard to this last point, it is relevant to note that degree of capacity utilisation is accompanied by constancy in gross fixed investment. That is to say, notwithstanding the excess of unused capacity present in the processing industry, the nature of gross fixed investment has not been altered in the slightest. Industrial policy based on the direct substitution of depreciating capital stock has thus replicated the existing structural deficiencies without taking account of changing economic trends. As is demonstrated by figures 1.3.5 and 1.3.6, over the last decade the policy of simply substituting worn out equipment has not altered the productivity of either labour or capital. Thus, entrepreneurs have simply responded to market pressures by sustaining the status quo, investment being simply a response to physical deterioration of the capital stock of the industry, without adapting to external conditions (i.e. laws, and the loss of competitiveness).

This defensive strategy has had the support and encouragement of EEC structural policy which has only recently begun to reward investment aimed at increasing productivity, so as to partially compensate for the rising (relative) cost of labour. Thus, the impact of Community policy in the form of its structural policy has been the maintenance of the existing levels of production and employment, without, however, tackling the existing structural problems and without a policy of orientation to prepare for the unification of Community markets.

A relative growth in competitiveness is not common to all sections of the fish processing industry and does not depend exclusively on the nature of gross fixed investment. Specific productive subsectors respond differently to market conditions, with the only common factor being the dependence on foreign provision of raw materials. Going beyond problems of individual subsectors, it should be stressed that the principal problem of the processing industry is the lack of competitiveness of Italian production with respect to foreign producers caused by the high cost of labour. Given that the processing industry is invariably "labour intensive" it is clear that, as long as the domestic product supplied is similar to, and in competition with, that provided by foreign producers, the conditions for a growth in employment do not exist and domestic demand is destined to be increasingly satisfied by foreign production. Furthermore, as long as structural and market policy (CFP) does not change direction, the sector cannot evolve in a positive manner both with regard to production and to employment (see fig. 1.3.1 to 1.3.6).

#### 1.3.2. The fish processing industry in the area and principal productive subsectors.

Tuna processing, represents an important share of the subsector (14.500 tons in 1990 and around 250 workers in the two administrative regions) In Sicily there are three small / medium size factories totalling around 7.000 tons of processed raw material, while in Sardinia there is only one, large size, canning factory where around 7.500 tons of processed raw material



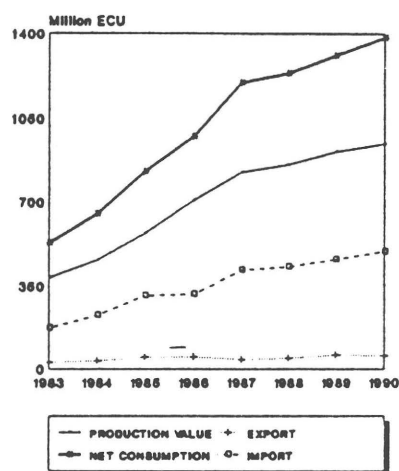
are processed. Since Italian production of tuna is virtually non-existent (3./4.000 tons) if compared with the total tuna processed in the Country (140.000 tons) it is evident that there is no link between the catching and canning sector and no direct induced employment can be foreseen.

There is a limited production of salted sardines in the area and this is done in small laboratories located in the Agrigento and Palermo Provinces. These laboratories are primarily involved with a large production of anchovies, salted and filleted in oil. More than 50 small laboratories are actually active in the area and at least 80% are real family business. The size of the factories is determined by the high level of flexibility needed by this production, since periods of intense activity follow periods where activity is reduced to nothing and workers are involved with other, not necessarily fish based, productions. The value of the production is high if compared with other products. The unit value of anchovies in oil is about 25.000 Lit/kg, while tuna reaches only 8.000 Lit/kg. During 1990, anchovy processed production reached about 11.000 tons, while there were about 700 workers employed, all of them located in Sicily.

Factories processing non frozen products are also important either for the value of the production and in terms of employment. Production is located both in Sicily and Sardinia and once again most of the productive units are family business. The raw material used for the process is supplied in equal measure both from local sources (mackerel, eel, tuna, swordfish, pilchards) and from import (molluscs, squid, cuttle fish, etc.). Production in the area amounts to 6.000 tons and employment reaches 150 workers. As regard frozen fish products, domestic production is particularly concentrated in Sicily and over than 32% of the raw material come from local sources (mainly sole, cod, octopus and squid). More than 20 firms of different sizes compete in producing more than 10.000 tons of final product, while there are more than 100 workers employed. Thus, with regard to intersectoral dependence one needs to be careful in identifying areas which are "heavily dependent on fisheries", with the resultant employment effects. The presence of freezing plants provides an indication of this dependence. However, the sector is so small (no more than 3% of domestic production) that one may say that there are no areas "heavily dependent on fisheries" which cannot absorb the negative effects on fishing activities of possible restrictive policies. The dynamics of employment in this sector is dealt with in step 1.4.3.

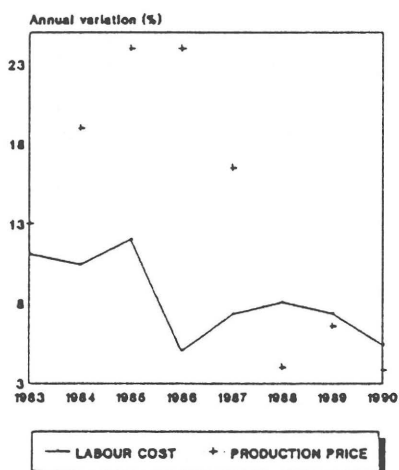
TAB. 1.3.1 PRINCIPAL INDICATORS FOR THE PROCESSING INDUSTRY - 1983/1990											
YEAR	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
1983	384	26	173	-146	530	87000	7	63	6600	11.11	13.00
1984	458	32	226	-194	652	95100	10	64	6500	10.44	19.00
1985	569	50	309	-260	828	107600	13	65	6700	12.00	24.00
1986	707	49	316	-267	975	120500	17	68	6800	5.00	24.00
1987	823	39	416	-377	1200	130500	17	70	6900	7.30	16.50
1988	854	45	430	-385	1239	129110	19	65	7050	8.05	4.00
1989	910	59	460	-401	1312	137400	15	63	7100	7.34	6.58
1990	945	56	495	-439	1384	144300	12	58	6800	5.34	3.84
[1] National production value at market price (million ECU)											
[2] Export value at market price (million ECU)											
[3] Import value at market price (million ECU)											
[4] Inbalance commercial trade at market price (million ECU)											
[5] Net consumption at market price (million ECU)											
[6] Production (tons.)											
[7] Gros investments (million ECU)											
[8] Average exploitation of firms (%)											
[9] N. of workers											
[10] Annual variation of the labour cost's (%)											
[11] Annual variation of production prices (%)											
Source: elaboration on ANCIT data											

PRODUCTION, IMPORTS, EXPORT, NET CONSUM.  
PROCESSING INDUSTRY



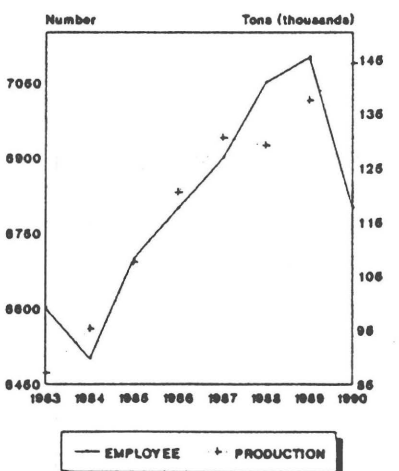
(Fig. 1.3.1)

LABOUR COSTS AND PRODUCTION PRICE  
PROCESSING INDUSTRY



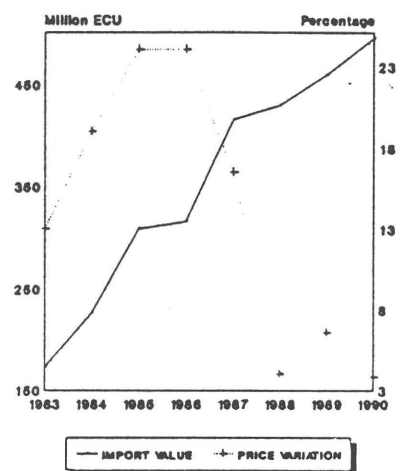
(Fig. 1.3.3)

EMPLOYMENT AND PRODUCTION  
PROCESSING INDUSTRY



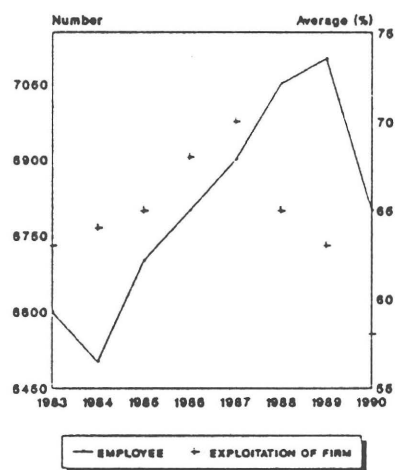
(Fig. 1.3.6)

VALUE OF IMPORTS AND PRICE VARIATION  
PROCESSING INDUSTRY



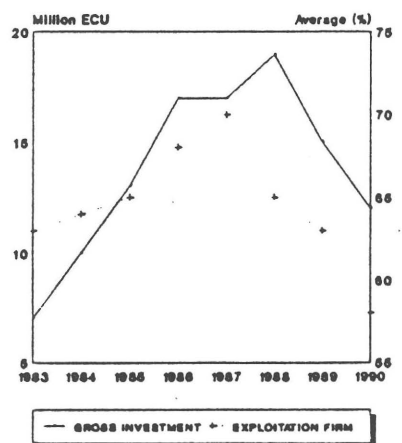
(Fig. 1.3.2)

EMPLOYMENT, CAPACITY UTILIZATION OF FIRM  
PROCESSING INDUSTRY



(Fig. 1.3.4)

GROSS FIXED INVESTMENT, CAPACITY UTILIZATION  
PROCESSING INDUSTRY



(Fig. 1.3.5)

Source: Our processing on ANCIT data

## 1.4 SUPPORTING SECTORS, DISTRIBUTION AND RELATED SECTORS

### 1.4.1 Fishing ports

In area I.3 there are 57 national ports equipped for fishing boats. Even so, the infrastructure is not sufficient to guarantee the range of services necessary to rationalise and improve the conditions for the unloading and first sale of the catch.

A study commissioned by the Ministry for the Merchant Navy has compared the existing state of affairs as regards the equipping of fishing ports with what would be theoretically optimal. As a result it has been possible to identify the financial requirements necessary to improve conditions regarding fishing and the unloading of the catch.

In the present case, given the conditions of port structures in the area under study, the investment necessary to equip fishing ports comes to around 46 million ECU. Sicily, requiring 35 million ECU, accounts for almost 78% of the area's financial requirements. In this region the majority of this sum is necessary for equipment related to production. The same is true for Sardinia. In both cases, the lack of port infrastructure is of substantial importance when one considers the role played by the two fleets in the national fisheries sector. The financial requirements of the area constitute 27% of the national total and the majority of this is required for productive infrastructure, however, also a substantial amount of safety equipment is required. The dynamics of employment in this sector is dealt with in step 1.4.3.

### 1.4.2 Commercial channels

The destination of area I.3's produce varies according to the fishing area. In fact, in the case of the Mazara del Vallo fishing area which comprises 37% of the fleet, produce is refrigerated or frozen and sold on the Italian mainland.

In contrast, the fragmentation of the fleet amongst 244 landing places in the area translates itself into the segmentation of distribution channels. On the one hand, there are fish markets institutionally set up in order to bring together demand and supply. On the other, private operators, quite different in function and scale from the institutional markets, have the task of distributing fresh fish throughout the area.

In fact, if one excludes prawns which are frozen on board and subsequently processed by the local processing industry ashore, the modest quantities of produce passed to local processing industries is not processed or conserved, but is sold fresh. In this context, distribution of the catch is limited to the province or, at most, the region. The sale to final consumers is carried out by specialised fishmongers which even today, notwithstanding large-scale investment in this sector by the bigger distributors, remains the principal channel for the sale of fresh fish.

## Fish markets

This analysis of fish markets in area I.3 is based on data available which relate to five of the sixteen markets in the area under study. The evaluation of the data, apart from drawing attention to the technical and economic indicators relating to the markets, is concerned with the analysis of average (sample) values of structural parameters (see table 1.4.2).

Such an analysis shows that the current dimensions of the structure represent an obstacle to increasing the quantities sold. Given the productive potential of the area, the markets' dimensions are in line with the quantities passing through them.

From this point of view, the current scale of operations represents a physical obstacle to increasing in the quantities sold in fish markets. In contrast, the presence of "off-the-market" sales, estimated as representing 30% of market sales, provide the possibility for increasing fish sales. In this context, the possibility to exploit the potential that a reduction in "off-the-market" sales would represent is conditional on, on the one hand, an expansion of existing structures and the construction of new public commercial complexes and, on the other, the capacity of markets to provide additional services above and beyond the sale of produce.

The level of employment in these structures is constrained by the level of trade carried out therein. Indeed, apart from the indispensable minimum employment necessary for the normal carrying out of market operations, expansion of the workforce must occur in the auxiliary services which aid the smooth running of the market.

## Wholesale

Given the evident shortcomings of the fish markets, private wholesalers have assumed a necessary role in the distribution and sale of fish.

In area I.3, there are over 600 registered wholesalers (equal to 15% of the national total) whilst those who are effectively operative are no more than 220 (17% of the national total). Thus, effective fish wholesalers make up 38% of those registered. Even though these figures refer to the Census of 1981 the picture is still valid.

With regard to area I.3, a previous examination of the density of the catch (in terms of value) and the density of wholesale outlets by region, controlling for population density, suggests a close link between the location of wholesalers and fishing areas that goes beyond simple regional disparities and is attributable to the uneven distribution of fishing activities.

This fragmentation depends on the relative weight of inland compared to coastal areas which, in our case, is limited to a few provinces (for example, the province of Enna in Sicily in figure 1) and the limited range of activity of wholesalers who do not generally extend beyond the boundaries of single provinces, whether they are acting as receivers of fish direct from fishermen, supplying final consumers or commercial outlets.



This is true in general, with the exception of wholesaling in the more productive provinces, such as Trapani, Agrigento and Cagliari which have a substantial role also in interregional distribution.

A quick look at the map of the provinces provided in figure 1.4 is sufficient to verify the unequal distribution of fish wholesalers with the highest concentration being found in coastal provinces. 80% of wholesalers operate in coastal provinces with only 20% operating in inland provinces.

Another aspect of the fish distribution network is the dichotomy between small and large firms, with a clear prevalence of the former. 75% of firms employ between one (proprietor) to five persons; just 2.2% of wholesalers employ more than 20 persons.

There is also a marked tendency towards specialisation in one form of product (fresh, frozen or processed) which reflects the lack of dynamism of the family business which tend to be as lacking in any desire to diversify as they are in technical and managerial skills. This has consequences for consumption in as much as the specialisation of suppliers tends to shrink the consumers' preferences and thus acts as an obstacle to future evolution of the market. Diversification is also lacking in the prevalent types of activity. Few wholesale firms also undertake the related activities such as decapitation, gutting or packing or have been vertically integrated with retail outlets.

#### 1.4.3 Related activities

In Italy, the productive units involved in all economic activities are over 3.5 million firms employing around 17 million people. In the area under consideration there are more than 300,000 firms with over 1.2 million employees.

Necessarily limited to a qualitative and quantitative analysis of the existing sectoral links, the starting point is the identification of categories of economic activity that interact with the fishing industry. Thus, we have used an Input-Output matrix for Italy, broken down into 92 branches of economic activity, which identifies both the origin of inputs and the destination of output from fisheries. On the basis of this matrix, we have identified the corresponding activities branches to the individual activity category, more than 500. More than 250 business types related to fishery have been identified and finally related to the 17 activities branches related to the regional matrix.

In Italy the analysis may, in this way, be narrowed down to a consideration of 1.2 million firms with around 8.1 million employees. In the case of area I.3, the relevant population consists of roughly 100,000 firms (around 30% of the areas total) employing a workforce of roughly 0.7 million equal to around 55% of total employment in the area (see table 1.4.3).

The analysis is carried out using regional input-output tables which divides economic activity up into 17 branches (see appendix 1). The regional tables include the relevant subsectors, namely fish farming, fish processing, fishing ports, distribution



(wholesale and retail), boat construction and other related activities distributed across the 17 branches of economic activity. For each region in the area under study the fishing sector has been broken down on the basis of regional economic accounts, the structure of investment and working units involved in each activity (1).

Induced regional employment is defined in terms of the sum of the full-time equivalent manhours employed in the fishing industry, and not in terms of the (larger) number of people actually employed in each activity. The strenght of regional links between sectors, i.e. the volume of business of fishery-related production activities has been obtained by the value of the normalized exchange of the agricultural sector with other production sectors together with a synthetic numerical conversion factor, in order to consider the high employment levels of non-productive and service activities. This allows the quantification of employment multipliers for individual branches at a regional level (see table 1.4.5), which in turn allows induced employment in the single branches of economic activity by region to be derived (see tables 1.4.6 and 1.4.4) (2). It is worth recalling the statistical bond which forces to consider fishery-related sectors as all of the activities connected to it, e.g. fish processing, aquaculture, building, marketing (wholesale and retail), transport, commercial and non-commercial services. It indirectly considers also the import/export flows, both between regions and between nations, of raw materials and manufactured goods.

#### Results by branch of economic activity

In terms of sectoral interrelations the direct links between fishing and related activities are distinguished by their "pervasiveness". Employment induced on "Trade, lodging and catering" by fishing is highest for this sector, as is reflected by the induced employment multiplier which has a regional average of 0.12. This implies that for every eight seamen employed on board fishing boats there is, on average, one person employed in the "Trade, lodging and catering" branch (namely retail). The individual regional employment structures result into 1,600 job opportunities, for persons working in the fishery sector alone.

However, not all the branches of economic activity have what may be considered sufficient linkages; on the contrary, in the case of area I.3, the weakness of the productive structure on shore is such that linkages with fisheries is reduced to around six branches of economic activity: "Trade, lodging and catering" (sale of produce); "Fuel and power products" (fuel and lubricants); "Food, drinks and tobacco" (fish processing); the

(1) Working units refer to the volume of work in productive activities in terms of the full-time annual manhours. Thus, the concept of a working unit does not necessarily correspond to actual employees whose actual working hours will vary between types of work.

(2) The definition of the 17 branches of activity and their correspondence to the 44 branches of activity identified by the NACE-CLIO classification and the 92 branches employed in the national input-output table are given in the appendix of final report.

"Means of transport" (boat building); the "Metal Products" (equipment, engines and motors); and finally, "Non-market services" (assistance) (see table 1.4.6).

In terms of employment, apart from the 1600 units in the "Trade, lodging and catering", induced employment is also important in "Fuel and power products" and in "Food, drink and tobacco" (roughly 650 full-time equivalents). A third level of linkages exists for the "Means of transport" (around 300 working units) and "Agricultural and industrial machinery" (around 150 working units).

It should be noted that, with some exceptions, the structure of linkages is close to those at a national level. This is obviously due to the relative importance of Sicilian fishing in the national context. Furthermore, the picture of productive interdependencies emerging in area I.3 is sufficiently homogeneous across the two regions to put them together, notwithstanding the quantitative differences that distinguish one from the other (see table 1.4.6).

#### Results by administrative region and branch of activity

The employment multiplier effect for the two administrative regions in area I.3 comes to 0.22, or, in other words, for every five seamen there is one job in related activities. The greater degree of geographical isolation of Sardinia is the cause of the large induced employment effect (0.31 against .20 for Sicily). These values are sufficiently low with respect to the national average (0.68) as to constitute a different productive combination of labour in the said regional productive sectors.

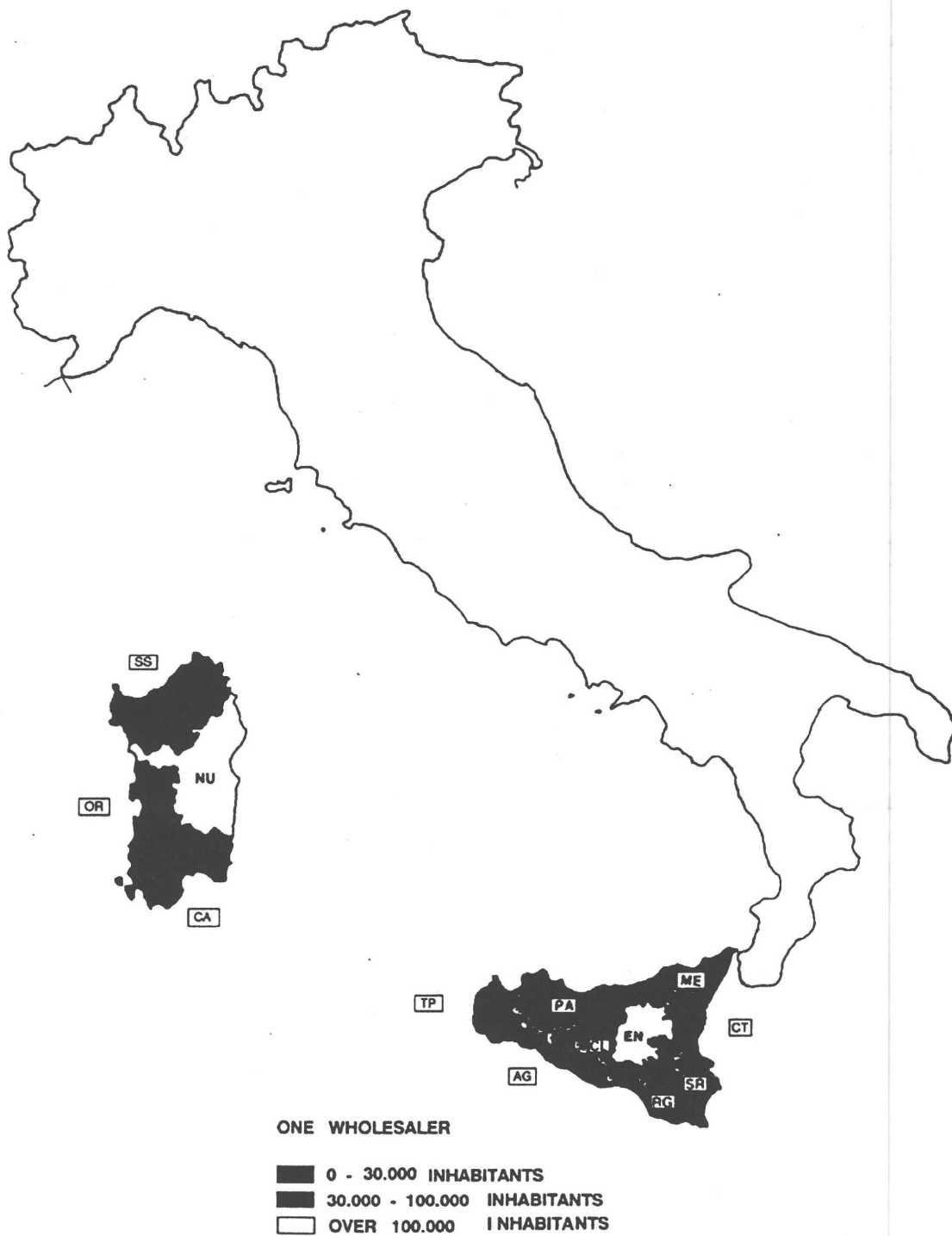
The significant structural weakness accounts for the low level of linkages between sea and land activities, inhibiting a process of vertical integration which, in the case island regions, might appear natural. Indeed, the specific regional productive structure determines the size of intersectoral links. In this case, it is the existing availability, at a regional level, of goods and services that define the links with the regional fishing industry. In other words, the elements for the integration of production exist only at the level of the primary requirements of the fishing fleet. Simply stated, it is the existence of a supply that determines the demand by the fishing industry for goods and services. Obviously, in cases in which a local supply does not exist, the demand by the fishing industry for products produced by other sectors will be directed towards other regions and/or areas. This reinforces the low capacity of fishing to act as a driving force for employment creation at the regional level.

As a result, the levels of employment induced by fisheries are modest. In area I.3, induced employment comes to around 3,700 full-time equivalents (including retail outlets) which may be seen against the total of 16,700 units employed at sea. The similarity of the two regions leads one to stress the weakness of the employment structure in related sectors and, consequently, the low probability of the existence of endogenous factors favouring the mobility of labour.

TAB. 1.4.1	FINANCIAL REQUIREMENT OF FISHING PORTS IN AREA I.3 BY TYPE OF EQUIPMENT (ECU current price 1989)				
TYPE OF EQUIPMENT	SICILIA	SARDEGNA	AREA I.3	ITALY	AREA I.3/ITA %
Commercial equipment	10.318.960	1.919.826	12.238.787	44.431.323	28
Production equipment	18.500.228	5.000.576	23.500.804	88.462.426	27
Safety equipment	6.581.104	3.204.440	9.785.544	33.902.480	29
TOTAL	35.400.293	10.124.842	45.525.135	166.796.229	27
Source: our processing on Ministry of Marchant Marine data					

TAB. 1.4.2		STRUCTURAL PARAMETERS OF FISH MARKET IN AREA I.3 (Average value 1989)				
ZONE	QUANTITY AREA	QUANTITY EMPLOYEES	QUANTITY HOURS	SALES VALUE/ EMPLOYEES	SALES VALUE/ OPERATORS	SALES VALUE/ HOURS
	(Tons/ m <sup>2</sup> )	(Tons/ n.)	(Tons/ n.)	(ECU/ n.)	(ECU/ n.)	(ECU/n.)
SICILIA	2,48	52	0,11	910.313	16.162	2.164
SARDEGNA	10	500	7,69	1.324.091	33.268	20.388
Source: our processing on ICRAP and CERCOMINT data						

FIG. 1.4 FIHS WHOLESALE OUTLET DENSITY (PER CAPITA) AREA I.3



TAB. 1.4.3 PRODUCTIVE UNITS AND EMPLOYMENT BY REGION - AREA I.3 (1981)				
ZONE	RELATED WITH FISHERIES AND ANCILLARY ACTIVITIES		ALL ECONOMIC ACTIVITIES	
	ESTABLISHMENT	EMPLOYMENT	ESTABLISHMENT	EMPLOYMENT
SICILIA	69607	484729	228307	903477
SARDEGNA	32280	187388	85759	346997
AREA I.3	101887	672117	314066	1250474
ITALY	1180139	8108620	3513523	16883286
Source: Our processing on ISTAT CENSUS - 1981				

TAB. 1.4.4 DIRECT AND INDUCED EMPLOYMENT ESTIMATE IN FISHING AND RELATED ACTIVITIES BY REGION (1988)				
ZONE	FISHERMEN AT SEA	INDUCED EMPLOYMENT	TOTAL EMPLOYMENT	EMPLOYMENT MULTIPLIER
	[1]	[2]	[3]	[4]
SICILIA	13541	2714	16255	0.200
SARDEGNA	3153	973	4126	0.309
AREA I.3	16694	3687	20381	0.221
ITALY	54450	37319	91769	0.685
Source: Our processing on ISTAT data and IREPA data bank				



TAB. 1.4.5 EMPLOYMENT MULTIPLIERS BY BRANCH OF ECONOMIC ACTIVITY - AREA I.3				
BRANCH	SICILIA	SARDEGNA	WEIGHT MEAN I.3	ITALY
	[1]	[2]	[3]	[4]
1	0.00	0.00	0.00	0.00
2	0.04	0.04	0.04	0.04
3	0.00	0.01	0.00	0.02
4	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.03
6	0.01	0.02	0.01	0.07
7	0.02	0.01	0.02	0.06
8	0.03	0.05	0.04	0.10
9	0.00	0.00	0.00	0.03
10	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.03
12	0.00	0.00	0.00	0.00
13	0.08	0.16	0.10	0.28
14	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.01
17	0.01	0.01	0.01	0.01
TOTAL	0.20	0.31	0.22	0.68
Source: I.R.E.P.A.				

TAB. 1.4.6 INDUCED EMPLOYMENT BY BRANCH OF ECONOMIC ACTIVITY AND ADMINISTRATIVE REGION IN AREA I.3				
BRANCH	EMPLOYEE IN SICILIA	EMPLOYEE IN SARDEGNA	EMPLOYEE IN AREA I.3	EMPLOYEE IN ITALY
	[1]	[2]	[3]	[4]
1	3	1	4	24
2	497	141	638	2262
3	9	39	48	920
4	1	0	2	116
5	27	2	29	1448
6	93	51	144	4048
7	295	18	312	3073
8	465	164	629	5535
9	5	3	8	1386
10	4	2	6	225
11	30	13	42	1662
12	5	2	8	73
13	1118	493	1611	15110
14	19	5	24	150
15	15	3	19	161
16	38	11	49	474
17	91	24	115	654
IND. EMPL	2714	973	3687	37319
MULT. EMPL	0.200	0.309	0.221	0.685
FISHERMEN N.	13541	3153	16694	54450
Source: I.R.E.P.A.				



## CHAPTER 2: THE IDENTIFICATION AND CHARACTERISTICS OF ZONES HIGHLY DEPENDENT ON FISHERIES AND ANCILLARY SECTORS IN AREA I.3

### 2.1 INTRODUCTION

Area I.3 is comprised of two administrative regions containing 13 administrative provinces (of which 12 are on the coast) (see fig. 1.A). It has two administratively distinct coastlines, which in turn are subdivided up into 11 maritime districts each with autonomous maritime control and powers of jurisdiction. Furthermore, each of the two administrative regions are subject to the "Special Statute" and therefore have autonomous control of all fisheries activity. Each maritime district has, in addition, its own geographical and social characteristics. As was mentioned in chapter 1, the existence of around 250 landing-points with the consequent dispersion of the fleet and employment along the 3,300 km of coast is the dominant characteristic of fishing activities.

In the area under study, there are no "real" centres of fishing activity with the exception of the province of Trapani (Mazara del Vallo). In fact, to the distribution of resources and the consequent dispersion of the fleet along the entire coast, should be added the structural characteristics of fishing methods and supporting activities. The entire area is, therefore, characterised by dissaggregated and disaggregating fishing activities whether in physical, economic or social terms.

To summarise, fishing activities in the area under consideration are the sum of a series of highly localised situations which, determined by the widely varying characteristics of the local sea's ecosystem, have given rise to a multiplicity of locally specific methods of production. Nevertheless, the total amount of business activities implies investment and employment levels far higher than other NUTS areas. Thus, one cannot assert that there exist "geographical zones highly dependent upon fisheries" which go beyond the confines of the local administrative unit (comune) in which fishing is carried out with the exception of the province of Trapani (Sicily).

Looking at the situation from the overall point of view, the degree of concentration of the fleet and the landing places and, therefore, employment is so low that fishing activities in the area in question appear as a continuum along the length of the coast, with the exception of the province of Trapani.

Thus, it is important to stress that the relative importance attributed to fishing will be highly sensitive to choice of the level of geographical dissaggregation to which the suggested socioeconomic indicators relate.

In comparison to the national situation, however, in both administrative regions fisheries represent a fundamental component of production and employment.

In this connection the evaluation of socioeconomic indicators changes radically when one passes from the regional to the provincial level. Furthermore, it is only at the level of the

local administrative unit (comune) that the role and relative importance of fishing in the local economy (principally as regards employment) can be identified with clarity and precision.

With regard to the question of employment, it should be pointed out that, in the context of the territorial subdivision for the purposes of economic analysis, and, in particular, labour economics, the "local labour systems" and the "functional labour regions" in Italy are territorially correlated entities, both of which are designed to identify local labour markets and are therefore a point of reference in the design and management of active labour market policy (3).

The territorial dimensions of "local labour markets" in Italy do not go much beyond communal boundaries, and, more or less, coincide with the said communes. Furthermore, according to the ISERS model of the functional repartition of the territory (IT-1990), the 8101 Italian communes have, on average, a degree of occupational autonomy (self contained employment) of over 90%, or, in other words, almost all employment opportunities are contained in the comune of residence of the workers. This is all the more true in areas in which the local economy is heavily dependent on fisheries and ancillary activities. This implies the penalisation of geographical labour mobility with the consequent rigidity in employment in productive areas (administrative communes or provinces). In area I.3 there are 766 administrative communes.

To this rigidity, is added the intersectoral rigidity, whether at a regional, communal or local level, which characterises productive activity in the area in question. If one adds the specialised character and the emargination of fisheries, one can only emphasise the meaninglessness of the identification of specific geographical zones which are highly dependent on fisheries and ancillary activities.

It is not unreasonable to suggest that, in the area under study, there are as many zones which are highly dependent on fisheries as there are landing-places.

Unfortunately, this suggestion cannot be verified by a quantitative analysis. In fact, in Italy, the absence of a data on the relevant variables at a communal (local administrative unit) level and the implicit difficulties of estimation impede the precise identification, or rather ordering, of the degree of relative dependence of communes on fisheries. However, the same conclusions are reached by analyzing the variables considered both at a provincial and regional levels. Indeed, we may say that if this is true at a regional and provincial level, it is much more true at a municipal level. In this connection, we list

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(3) The model of the territorial repartition of Italy represents a development of the "Standard Metropolitan Areas (SMSA)" (USA-1960), the "Functional Economic Areas (FEA)" (USA-1970), the "Standard Metropolitan Labour Areas (SMLA)" (GB-1978), the "Travel to Work Areas (TTWA)" (GB-1974), the "Daily Urban Systems (DUS)" (GB-1979), as well as the "Regionale Arbeitsmarkte" (RDF) and the "Zones d'Etude de l'Emploi (ZEE)" (FR-1985).

results obtained at the level of the administrative region and at that of the province (see tables 2.1 and 2.2). The latter provide the basis for the identification of the "zones highly dependent on fisheries" (even if the concept is not really applicable in the present case). The relative dependence being assessed in terms on employment, in economic terms and total terms (see table 2.3 and figure 2.1).

The statistics relating to employment in, and the value added of fishing employed of administrative regions are the official ISTAT figures, whilst for related activities the statistics are the result of our estimates produced on the basis of the statistics of TAGLIACARNE INSTITUTE. The statistics relating to employment and relative value added of administrative coastal provinces are the results of our estimates produced on the basis of the official ISTAT figures by coastal departments, whilst for related activities the employment statistics are the results of our estimates on the basis of the classification of the individual economic activities related to fishing (of which there are more than 250) drawn from the sectoral interrelationships between branches and sectors of economic activity at the national level, grouped into the 17 branches of economic activity (SEC classification) at the regional level which were constructed for each individual administrative region under consideration (see point 1.4.3). Finally, for the added value at coastal provinces, the statistics are the results of our estimates produced on the basis of the TAGLIACARNE INSTITUTE figures.

## 2.2 IDENTIFICATION OF THE ZONES THROUGH THE MEASUREMENT OF RELATIVE DEPENDENCE AT THE LEVEL OF ADMINISTRATIVE REGIONS

The population present in area I.3 represents 12% of the national total and comes to 6,800 million people, of whom 37% are in the labour force. The high rate of unemployment (roughly 23% compared to the national average of 12%) in the area, however, brings total employment down to around 2,500 million people or ~9% of national employment. A consequence of this is the lower per capita gross output of the area equal to 8,200 ECU compared to the national average of 12,200 ECU.

Employment in fisheries represents just 0.86% of total employment in the area and produces just 1.04% of total wealth. If one considers also activities related to fisheries the degree of relative dependence falls to 0.55% in terms of employment and 0.75% in terms of economic value, i.e. the relative significance of employment in fishery is infinitely low. Notwithstanding this, the figures are well above the national averages (0.15% and 0.33% respectively) and the overall volume of landing exceeds 94 thousand tons for a value exceeding 1450 million ECU.

There are not substantial regional disparities in the area under consideration and it is rather difficult to classify one in particular as the administrative region which is highly dependent on fishing. This is a consequence of the lack of differentiation in the productive structures and of the weight of local economies in the individual administrative regions in the geographical area



under study. There are, thus, "zones highly dependent on fisheries" distributed across the entire area and across the individual regions. Despite this, the total amount of business activities implies dependence levels for higher than other areas (see table and fig. 2.1), notwithstanding the supremacy of Sicily in the context of the area.

### 2.3 IDENTIFICATION OF THE ZONES THROUGH THE MEASUREMENT OF RELATIVE DEPENDENCE AT THE LEVEL OF COASTAL PROVINCES

On the basis of the relative importance of fishery in terms of employment the considered zones are the provinces of Sassari and Cagliari, in Sardinia; the provinces of Messina, Siracusa, Agrigento and Trapani, in Sicily. On the basis of the relative importance in economic terms, the considered zones are the province of Cagliari, in Sardinia; the provinces of Agrigento and Trapani, in Sicily.

As outlined in the plan of work, four "zones 'highly' dependent on fisheries and ancillary activities" have been identified in area I.3. On the basis of the relative importance of fisheries, in economic and occupational terms, and on the basis of the relative values exceeding the average of the area, the zones are: the provinces of Trapani, Agrigento and Siracusa in Sicily; the province of Cagliari in Sardinia (see table and fig. 2.2 - 2.3).

It is important to stress that the identification is highly dependent on the specific criteria adopted. Of these, only the provinces of Trapani and Agrigento (Sicily) are a true centres of fishing, whilst the relative importance of the others varies according to: the local productive structure; the degree of sectoral integration; and, the degree of local specialisation.

### 2.4 CONCLUDING COMMENTS AND PROPOSALS

The identification of geographical zones which are highly dependent on fisheries and ancillary activities on the basis of the analysis of relative dependence (considered in section 2.1), can only give an indication of the direct effects on the local economy, thus indicating the zones at immediate risk. The analysis using the SAM approach, not here reported, has demonstrated, on the other hand, that direct and indirect effects compensate each other, thus equalising relative dependence across individual areas and regions.

In general terms, a reduction in fishing activities in the two regions in Italy would produce substantial socioeconomic effects. Whether one considers total income, employees' incomes or employment, the secondary effects are always substantial.

It is clear that these policies aimed at compensating the negative effects under consideration, must be altered according to whether they are intended to counteract direct or indirect effects.

In the case of direct effects, policies should be





TAB. 2.1 SOCIO-ECONOMIC INDICATORS FOR FISHERIES AND AQUACULTURE BY REGION - AREA I.3															
ZONE	GENERAL FEATURES OF THE ZONE					NUMBER OF JOBS IN FISHERIES AND RELATED ACTIVITIES - units 1988			ADDED VALUE OF FISHERIES AND RELATED ACTIVITIES - Mio ECU 1989			RELATIVE DEPENDENCE			
	TOTAL POPULATION 000 '89	WORKING FORCE 000 '89	TOTAL NUMBER OF JOBS 000 '89	G.D.P.		FISHERMEN ONLY	OTHER JOBS	TOTAL	LANDINGS & FIRST HANDLING	OTHER ACTIVITIES (*)	TOTAL	IN TERMS OF JOBS ‰		IN ECONOMIC TERMS ‰	
				TOTAL Mio ECU	PER CAPITA Mio ECU										
	a		b	c	d=c/a	e	f	g=e+f	h	i	j= h + i	e/b	g/b	h/c	j/c
SICILIA	5110	1879	1431	41138	8,050	13541	2716	16257	244,047	80,770	324,817	9 1/2	11 1/2	6	8
SARDEGNA	1643	644	520	14402	8,766	3153	973	4126	58,731	29,792	88,523	6	8	4	6
AREA I.3	6753	2523	1951	55540	8,224	16694	3689	20383	302,778	110,562	413,341	8 1/2	10 1/2	5 1/2	7 1/2
ITALIA	56836	23870	21004	691462	12,166	54450	37319	91769	1063,401	1238,687	2302,088	2 1/2	4 1/2	1 1/2	3 1/2
(*) Figures on added value of related activities in the table are estimated underlying hypotheses were that jobs in related activities produce an amount of gross added value against factor costs per capita, by administrative region, equal to the corresponding multiplier of regional added value as obtained by our processing of regional input-output tables (IREPA, 1992, A quasi SAM approach to Study Fisheries)															
Source: I.R.E.P.A., I.S.T.A.T., TAGLIACARNE INSTITUTE															

TAB. 2.2 SOCIO-ECONOMIC INDICATORS FOR FISHERIES AND AQUACULTURE BY 12 PROVINCE ABOVE 13 - AREA I.3 (*)															
ZONE	GENERAL FEATURES OF THE ZONE					NUMBER OF JOBS IN FISHERIES AND RELATED ACTIVITIES - units 1988			ADDED VALUE OF FISHERIES AND RELATED ACTIVITIES - Mio ECU 1989			RELATIVE DEPENDENCE			
	TOTAL POPULATION 000 '89	WORKING FORCE 000 '89	TOTAL NUMBER OF JOBS 000 '89	G.D.P.		FISHERMEN ONLY	OTHER JOBS	TOTAL	LANDINGS & FIRST HANDLING	OTHER ACTIVITIES	TOTAL	IN TERMS OF JOBS ‰		IN ECONOMIC TERMS ‰	
				TOTAL Mio ECU	PER CAPITA Mio ECU							e/b	g/b	h/c	j/c
	a		b	c	d=c/a	e	f	g=e+f	h	i	j= h + i				
Messina	692	255	194	5774	8,3	1667	333	2000	6,589	9,903	16,492	8 1/2	10 1/2	1	3
Catania	1073	395	301	8924	8,3	1215	243	1458	10,494	7,226	17,720	4	5	1	2
Siracusa	411	151	115	3859	9,4	2009	402	2411	10,006	11,955	21,961	17 1/2	21	2 1/2	5 1/2
Ragusa	290	107	81	2299	7,9	40	8	48	10,982	0,238	11,220	1/2	1/2	5	5
Caltanissetta	294	108	82	2296	7,8	14	3	17	0,244	0,089	0,333	0	0	0	0
Agrigento	491	181	138	3062	6,2	1780	356	2136	45,393	10,587	55,980	13	15 1/2	15	18 1/2
Trapani	438	161	123	3469	7,9	3899	780	4679	134,714	23,196	157,910	31 1/2	38	39	45 1/2
Palermo	1261	464	353	10190	8,1	2917	583	3500	25,625	17,338	42,963	8 1/2	10	2 1/2	4
Cagliari	765	300	242	6488	8,5	1900	587	2487	40,407	17,973	58,380	8	10 1/2	6	9
Nuoro	277	109	88	2085	7,5	35	11	46	2,651	0,337	2,988	1/2	1/2	1 1/2	1 1/2
Sassari	450	176	142	4616	10,2	1202	371	1573	12,609	11,360	23,969	8 1/2	11	2 1/2	5
Oristano	160	63	51	1212	7,6	16	5	21	3,064	0,153	3,217	1/2	1/2	2 1/2	2 1/2
Total of the 12 provinces	6602	2470	1910	54274	8,2	16694	3682	20376	302,778	110,355	413,133	9	10 1/2	5 1/2	7 1/2
AREA I.3 13 Provinces	6753	2523	1951	55540	8,2	16694	3689	20383	302,778	110,562	413,340	8 1/2	10 1/2	5 1/2	7 1/2
ITALY	56836	23870	21004	691462	12,2	54450	37319	91769	1063,245	1238,687	2301,932	2 1/2	4 1/2	1 1/2	3 1/2
Source: I.R.E.P.A., I.S.T.A.T., TAGLIACARNE INSTITUTE															

TAB. 2.3	ZONES DEPENDENT ON FISHERIES AND ANCILLARY ACTIVITIES - AREA I.3														
ZONE	GENERAL FEATURES OF THE ZONE					NUMBER OF JOBS IN FISHERIES AND RELATED ACTIVITIES - units 1988			ADDED VALUE OF FISHERIES AND RELATED ACTIVITIES - Mio ECU 1989			RELATIVE DEPENDENCE			
	TOTAL POPULATION 000 '89	WORKING FORCE 000 '89	TOTAL NUMBER OF JOBS 000 '89	G.D.P.		FISHERMEN ONLY	OTHER JOBS	TOTAL	LANDINGS & FIRST HANDLING	OTHER ACTIVITIES	TOTAL	IN TERMS OF JOBS ‰		IN ECONOMIC TERMS ‰	
				TOTAL Mio ECU	PER CAPITA Mio ECU										
a		b	c	d=c/a	e	f	g=e+f	h	i	j= h + i	e/b	g/b	h/c	j/c	
Siracusa	411	151	115	3859	9,4	2009	402	2411	10,006	11,955	21,961	17 1/2	21	2 1/2	5 1/2
Agrigento	491	181	138	3062	6,2	1780	356	2136	45,393	10,587	55,980	13	15 1/2	15	18 1/2
Trapani	438	161	123	3469	7,9	3899	780	4679	134,714	23,196	157,910	31 1/2	38	39	45 1/2
Messina	692	225	194	5774	8,3	1667	333	2000	6,589	9,903	16,492	8 1/2	10 1/2	1	3
Cagliari	765	300	242	6488	8,5	1900	587	2487	40,407	17,973	58,380	8	10 1/2	6	9
Sassari	450	176	142	4616	10,2	1202	371	1573	12,609	11,360	23,969	8 1/2	11	2 1/2	5

Source: I.R.E.P.A., I.S.T.A.T., TAGLIACARNE INSTITUTE

FIG. 2.1 ZONES DEPENDENT ON FISHERIES AND ANCILLARY ACTIVITIES BY ADMINISTRATIVE REGIONS AREA I.3

FIG. 2.2.A ZONES DEPENDENT ON  
FISHERIES AND ANCILLARY ACTIVITIES  
IN TERMS OF JOBS BY  
ADMINISTRATIVE REGIONS



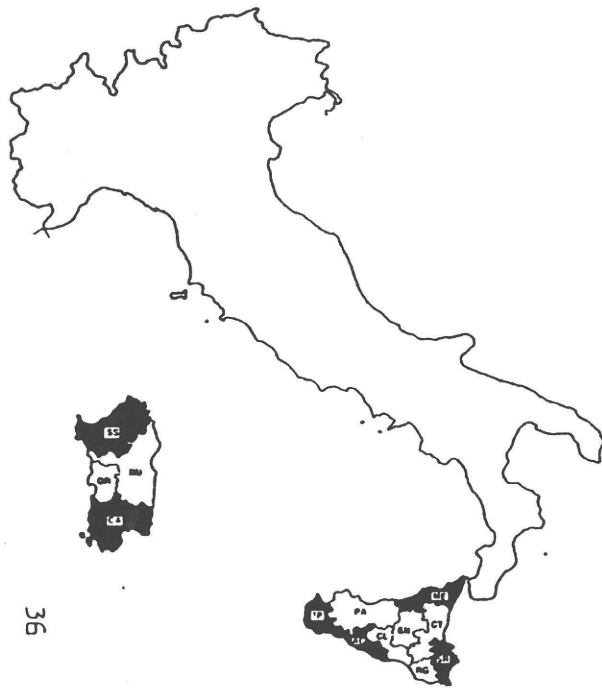
FIG. 2.2.B ZONES DEPENDENT ON  
FISHERIES AND ANCILLARY ACTIVITIES IN  
ECONOMIC TERMS BY ADMINISTRATIVE  
REGIONS



FIG. 2.2.C ZONES DEPENDENT ON  
FISHERIES AND ANCILLARY ACTIVITIES IN  
JOBS AND ECONOMIC TERMS BY  
ADMINISTRATIVE REGIONS



FIG 2.2.A ZONES DEPENDENT ON FISHERIES AND ANCILLARY ACTIVITIES IN TERMS OF JOBS BY COASTAL PROVINCES



36

SS: SASSARI; CA: CAGLIARI; TP: TRAPANI;  
AG: AGRIGENTO; SR: SIRACUSA; ME:  
MESSINA

FIG. 2.2.B ZONES DEPENDENT ON FISHERIES AND ACILLARY ACTIVITIES IN ECONOMIC TERMS BY COASTAL PROVINCES



CA: CAGLIARI; TP: TRAPANI; AG: AGRIGENTO;

FIG. 2.2.C ZONES DEPENDENT ON FISHERIES AND ANCILLARY ACTIVITIES IN JOBS AND ECONOMIC TERMS BY COASTAL PROVINCES



CA: CAGLIARI; TP: TRAPANI; AG: AGRIGENTO;  
SR: SIRACUSA

### 3.1 COMMUNITY POLICY ON FISHING

The CFP was initiated by (EEC) Rule no. 2141/70 and (EEC) Rule 2142/70. With these documents, a Community policy regarding fishing was laid out in terms of four main objectives, not all equally relevant for fishing in the Mediterranean. In fact, alongside structural and market policy which have been relevant (in the latter case partially) to Mediterranean countries, regulations have also been laid out regarding the management of internal and external resources which are entirely irrelevant to fishing in the Mediterranean.

In the early years, the emphasis on the regulation of markets had positive effects on the Italian market through control of supply or orientative prices. In any case, neither the instruments for market regulation, like the O.P., nor the organisational norms had a significant impact on the sector in Italy. Rather, in the early years, "structural policy for fisheries" encouraged a strengthening of the ocean fishing fleet and trawling.

The results achieved have been, in the long run, rather haphazard and the policy of strengthening the fleet has produced imbalances regarding its optimal organisation, as well as increasing the emargination of small scale fishing compared to Mediterranean fishing, that is to say, that part of the fleet which had access to Community subsidies and financing.

The subsequent development and expansion of the CFP, however, has produced levels of intervention which, in the context of the Community's structural policy, have included measures concerned not just with the fishing fleet, but also concerning the processing and commercialisation of fish products and fish farming.

As regards the Italian fishing fleet, the result has been the strengthening of the fleet which, however, has not been sufficient to allow adequate modernisation given the advanced age of much of the fleet. As regards fish farming, the effects have been relatively small due to the specialised nature of the sector in Italy. Indeed, the type of investment requested by Italian fish farmers up to now has been concentrated on highly capital-intensive systems with little impact on employment. The existence of other limiting factors has further prevented Italy from reaching rates of growth in production that other Mediterranean countries have achieved. An example of this is the absence of foreign capital investment in Italy which in other nearby countries has seen rapid increases. As regards the structural policy for the fish processing industry, from which Italy has gained benefit, it should be emphasised that the policy has allowed an expansion in the capacity of the industry which has allowed the sector to reduce Italy's dependence on foreign production of processed fish.

Market policy, directed towards the formation of organisations of producers, the regulation of prices (orientative prices and compensation), and the regulation of trade with



countries outside the EEC (tariffs, reference prices, compensating taxes), has had only a marginal impact on Italy which has used it only in specific cases. As regards CFP on resources (internal and external) the effects have been felt even less by Italy.

To summarise, the EEC's CFP, up until the mid-1980's has been concentrated on policies regarding the development of external agreements and regarding the North Sea and the countries fishing in it rather than the Mediterranean and Mediterranean countries of which Italy is one.

From 1983 on, the CFP has put a certain emphasis on problems of the management of internal resources and the (EEC) Rule 4042/86 followed by (EEC) Rule 3944/90 have made Community intervention regarding structural policy on the fishing fleet systematic and organised. Rules 355/77 and 4042/90 have organised structural policy on the fish processing and distribution industry. As regards the objectives of this policy and use Italy has made of it, much of the Community policy has been incorporated in National legislation and a number of initiatives are still in operation.

### 3.2 NATIONAL POLICY AND THE DEVELOPMENT OF THE SECTOR

In accordance with the CFP, the policy for the development of the sector in Italy found its first systematic organisation in the Law no. 41/82 and in the three year plans for fisheries and aquaculture which are the operative instruments of policy.

It is important to emphasise that an important re-orientation of the sector is underway, driven by administrative measures on the management of fisheries. In this case, the productive process should be understood as a combination of the social, economic, biological, industrial and financial phenomena capable of capturing the principal interdependencies and to promote conditions for harmonious development.

Regarding the new policy for the sector, it is worth drawing attention to the abandoning of a single overall target for the reduction in fishing intensity in favour of adapting the fleet to the availability of resources. This objective, in accordance with the Italian MAGP, is achieved through the setting of specific targets for each segment of the Italian fleet, that is, for each combination of geographical area, type of boat and fishing gear. The rationalisation and reallocation of fishing is based on the elimination of operational inefficiency within each homogeneous group of boats. The measures outlined tend to bring the management of inefficient groups of boats closer to more (technically and economically) efficient groups of boats through the regulation of fishing intensity.

The central instrument of the new system of regulation is the system of fish licenses introduced in 1982 and adopted as the basic criteria of the National Three-Year Plan. The construction of new boats and the withdrawal of old ones has followed a programme on the distribution of fishing intensity by geographical area and fishing gear so as to satisfy the overall requirements on the fleet's tonnage. Specific subsidies are given



to licensed boat owners for their withdrawal from fishing and their transfer to fish farming at sea. At the same time, taxes have been introduced on specific types of equipment to discourage particular types of fishing.

It is, however, the new financial policy which forms the crucial point of strategic planning. In fact, in contrast with the past, credit is provided on the basis of the priorities laid out in the Three-Year Plan and the level of intervention has been reduced and restricted to specific priorities.

### 3.3 THE RESULTS ACHIEVED

The adaptation of the capacity of the fleet to the availability of resources has been one of the principal aims of both the CFP and the Three Year Plans introduced up to now. The results achieved through the first Three-Year Plan (1983-6) were relatively modest, indeed, contrary to the original aims. In fact, by the end of the period there had been an increase in fishing capacity in terms of GRT and nominal KW and, at the same time, an increase in unused capacity.

The original lack of success may be attributed to the regulations of the previous period, and to the failure to use full the fishing licensing system. This deficiency was rectified with the introduction of the Second Plan (1987-91). The Second Plan was both wider in scope and more explicit in the intervention measures to introduce and succeeded in bringing about both a reduction in fishing intensity and the modernisation of the fleet, as well as other minor improvements. The tonnage and KW of the Italian fleet were, at the end of the period, reduced to a greater extent than was laid out in the MAGP. The new plans for a further reduction in Italian fishing intensity laid out in the programme adopted recently in the context of the MAGP will not be difficult to implement given the natural rate of withdrawal from fishing and the containment of fishing intensity in the various Italian fishing areas, and principally in the area under consideration in this study.

As regards the process of modernisation of the fleet over the period 1987-1991, thanks to the use of Rule 4028/76 around 390 modernisation projects regarding 6% of national tonnage have been implemented, exactly as laid out in the programme. With regard to boat building, around 120 new boats have been financed, accompanied by the scrapping of an equal number of old boats, and in this way, some progress has been made in the renewal of the fleet. There has, however, been a marked decline in employment in fisheries. This tendency will be even more marked in the next few years and consequently there will be a reduction in fishermen unprecedented in the long history of Italian fisheries.

## CHAPTER 4 RECONVERSION ACTION UNDERTAKEN BY THE EEC

### 4.1 THE APPLICATION OF COMMUNITY RECONVERSION PROGRAMMES IN ITALY

RENAVAL (EEC Rule 2506/88): on the basis of the eligibility requirements for the programme, neither region has been able to benefit from the proposed measures regarding boat building. The fundamental criterion for access to the programme's funds is based on the relative dependence of the relevant area on boat building associated with the decline in employment. That is to say, the assessment of the social and economic importance to the local economy of boat building. In this way, situations of crisis or of potential crisis are identified and the programme aims at aiding in the provision of the conditions of economic efficiency, through action aimed both at rescuing the area from industrial deterioration and at the promotion and diffusion of technological innovation, technical assistance and support services for small and medium-sized firms. The underlying motivation is the safeguarding of local conditions. For the other Italian areas work is on progress and it is impossible at this stage to offer an evaluation of its effects.

PILOT PLAN FOR ACTION (PROGRAMME OBJECTIVE 2) (EEC Rule 2052/88): The Community's "structural funds" provide for support measures for the reconversion of production of areas hit by the industrial recession. In contrast to the programme discussed above (Renaval), structural fund intervention is aimed at coping with, and compensating for, the decline of industrial areas. In this case, the purpose is not the safeguarding of economic activity which is going through a crisis, but the encouragement of a range of economic activities which can aid the revitalisation of an area hit by structural crisis. The credit provided for small and medium-sized firms is orientated towards promoting the diffusion of technology, the setting-up of new firms, the creation of employment and the safeguarding of the environment. In the specific case of area I.3, no single geographical area has been contemplated. In other areas affected by reconversion programmes, up to now the programmes are still in operation and thus do not allow a definitive evaluation.

RESIDER (EEC Rule 328/88): conceived originally for the reconversion of steel production, this form of intervention takes into account only those geographical areas highly dependent on this activity. For the area under consideration in this study, neither of the regions has been considered by the Commission. The strategy of intervention may be summarised in terms of capital grants to small and medium-sized firms in order to set-up new productive units, rationalisation of productive processes of already operative plants, expansion of existing capacity through the acquisition of new machinery, and the development and expansion of physical structures. Furthermore, it provides aid for assistance services necessary to sustain the level of production through subsidising market research, research into new products, and studies on productive cycles and means to raise productivity (automation). The support was provided from June

1991 on, and the programme is still in operation in the regions of Lombardy, Liguria, Tuscany and Umbria, receiving a total subsidy of 46 million Ecu.

LEADER (EEC Rule 4253/88): conceived to support economic activity and employment in small and medium-sized establishments in agriculture following the general objectives of the regional fund. These interventions, very varied in nature, favour the speedy implementation of individual projects, able to influence directly and indirectly the creation of new economic activity in the relevant geographical area. In essence, the programme envisages the creation of new cycles of local investment favouring improvements in employment opportunities. In Italy, 28 projects costing 80 million ECU have been approved.

#### 4.2 POSSIBLE ANALOGIES WITH, AND APPLICATIONS TO, THE FISHERIES SECTOR

Community programmes concerned with the reconversion of production are aimed at raising the efficiency of capital and labour, through the creation of new investment in areas affected by structural crises at the sectoral or regional level. The target variable employed by this measure of political economy remains the cost of money, assuming that crucial factor provoking the crisis is the lack of alternative investment in the sector. The objectives established are to be reached through the encouragement of autonomous investment. It is assumed to be certain that a reduction in the cost of money will autonomously generate investment.

Renaval and Resider are sectoral programmes directed towards specific geographical areas where their socio-economic situation of the area depends heavily on the particular activity. Both aim at the re-establishment of the conditions for efficiency in situations of sectoral crises and at the safeguarding of local conditions. They are, overall, programmes for intervention aimed at the supply of products. Analogies with the fishing sector are immediately obvious, in as much as they represent action aimed at individual sectors and at specific geographical areas highly dependent on that sector. One may point to the areas where fishing is fundamental in its direct effects on employment and investment (see chapter 2). However, the specific characteristics of fishing and its products, taking into consideration the effective degree of interaction with other branches of economic activity, point to a greater affinity with the Resider programme, which, going beyond the rescue of the conditions for efficiency considers the possibility of sectoral growth.

Objective 2 and Leader are regional programmes aimed at the construction of new productive assets, designed to revitalise both industrial and rural areas. The former is concerned with the overcoming the situation of crisis whilst the latter is concerned with the generation of development, both of them operating through the creation of new activity. Fundamentally, they are both programmes acting on demand, or, in other words, encouraging the driving force of production and the distribution of wealth.

Also in this case, the analogies are immediate: where indirect effects are relatively important with respect to areas in which these are less so (see chapter 2), the measures envisaged by the two programmes are ideally suited to fisheries.

With regard to the programmes discussed above, for application in the fisheries sector, the conditions for eligibility need to be re-examined as does the control and co-ordination of investment programmes.

However, certain specific characteristics of the production of fishing products broaden the relevant sectors. For example, one might point to aquaculture, with its need for the adaption of the physical environment (whether at sea, in lakes or on land), boat building related to the fishing fleet in connection with technological research, port activities and the related infrastructure, tourist activities, commercial activities (fish markets, means of transport, viability of roads etc.,) and technological, economic and social research.



## CHAPTER 5: CONCLUSIONS EMPLOYMENT OPPORTUNITIES IN FISHING AREAS AND THE IDENTIFICATION OF SUPPORTING MEASURES

The adjustment of fishing capacity to the available resources is the basic principle underlying the national plans for fisheries. Given the different structural characteristics and the different degrees of exploitation of these resources, policy aimed at achieving the objective in question must necessarily be pursued through a process of re-allocation of fishing across fishing gears and geographical areas. For example a hypothetical reduction of 2% in the capacity of the fishing fleet could be achieved through the scrapping of boats and restrictions on the number of days fishing allowed. If implemented, the socio-economic consequences will be limited to the myriad of fishing villages (see chapter 1).

Notwithstanding this, support measures should be introduced to allow an increase in the levels of efficiency and professional skills, whether the change envisaged is large or small. In fact, under the hypothesis that a restrictive policy is introduced or, alternatively, that a national programme is introduced aimed at improving economic efficiency of human and physical resources, institutional support is necessary.

In any event, the process of the reallocation of fishing capacity would imply direct consequences for employment both in the fishing sector and in those related to it. The measurement of these effects, through the evaluation of interdependencies at the level of the sector, the region and/or larger geographical area, determines the size of the labour force affected by the process of reconversion and the sector's prospects. In this specific case, induced employment is substantial (much greater than was expected) and comprises a myriad of activities and firms. It has been found that induced employment reflects the characteristic pervasiveness of the linkages and differs according to the local or regional occupational structure. Measures aimed at counteracting greater or lesser structural weaknesses should be directed towards policies concerned with the encouragement of demand and supply, respectively.

Even if geographical zones are identified that are "directly" dependent on fisheries at a local level (see section 2.1) it will be the numerous localities which will feel the effects of restrictive policies towards fisheries. To this may be added that employment opportunities are restricted, firstly, at a level of the individual comune (generally coinciding with local labour markets), and secondly, at the level of the individual sea provinces (generally coinciding with Italian functional labour systems). Furthermore, the presence of widespread indirect regional effects suggest that one needs to take care not to give too much importance to limited measures of provincial and/regional relative dependence on fisheries. Indirect effects on production, on incomes and regional value-added, eliminate differences between individual regions in terms of the relative dependence upon fishing. In this sense, it is possible to assert that there is a homogeneity in the relative dependence of individual areas (see section 2.2).

In terms of the socio-economic impact of the CFP (see



chapter 3), evaluation of the size and the type of employment lost at the level of the whole area, regions and provinces, associated with the measurement of intersectoral linkages with fishing, would suggest an investment policy directed towards a small change in the structure of intermediate and final consumption in other sectors, such as to absorb the expected reduction in the work-force employed in fisheries and ancillary activities.

The intersectoral linkages also give an indication of the the probability of success in absorbing excess workers from fisheries. Employment opportunities are limited to certain specific categories of economic activity, namely, naval carpentry, textiles, the provision of oil-based products, the supply of mechanical and electronic services, machining, repairing, food products and, finally, commercial outlets and lodging.

Experience has shown that there is a recurrent and natural transfer of activities towards other sectors under particular conditions (for example, towards the management and administration of activities, towards tourism, towards the commercialisation of products, towards the commercial supply of navigation equipment, towards repairing boats etc.). This phenomenon confirms the validity of the intersectoral linkages found above and indicates the natural path to which the absorption of employment should be directed. However, any direct measure must be integrated with the additional institutional guarantee and the possibility of access to credit for new organisational forms of management and services.

It should be emphasised that countless obstacles impede instantaneous action. Firstly, and most importantly, the stumbling-block of professional skills. The particular skills associated with, and characteristics of, fishing is such as to constitute an extreme job specialisation. Each employed person undertakes individual and specific operational tasks concerned with navigation, the catching of fish etc.. Supplementary skills have a small role in fishing.

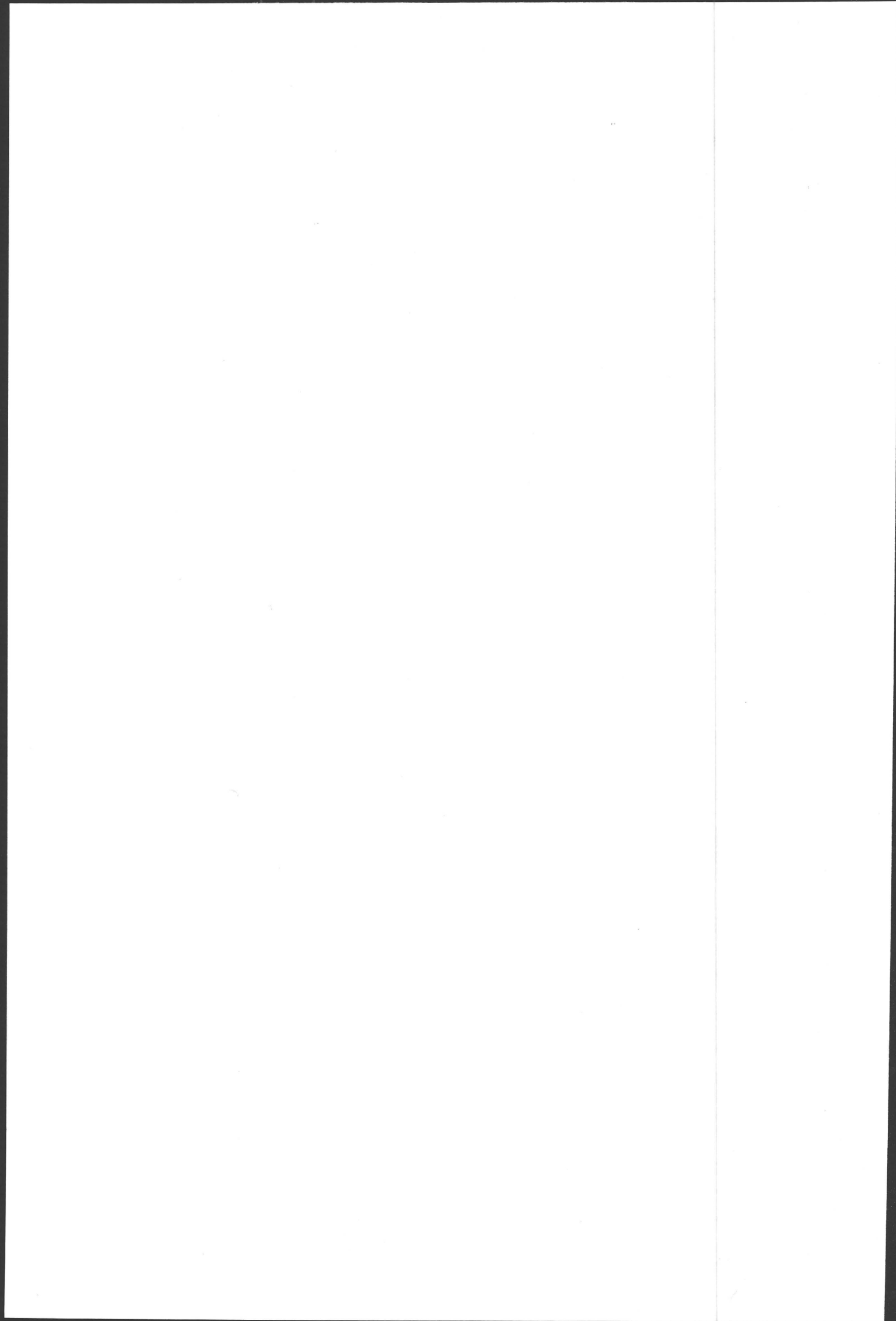
Thus, the importance of creating employment opportunities is confirmed with the necessity of overcoming the problem of professional qualifications, through the certification of experience already gained or through brief requalification programmes. Furthermore, it is of fundamental importance that the income obtainable from the alternative occupation is equal or greater to that earned at sea, otherwise any reallocation programme is doomed to failure from the outset.

Quite another approach needs to be adopted in areas in which the direct effects on employment are important. From the point of view of supply, the consolidation of the productive fabric must be able to count on the creation of new activities aimed principally at restoring the environment of in coastal areas, at the infrastructure necessary for the activity and at control and monitoring services for the activity. Countless opportunities offer themselves under this heading, for example, the encouragement of fish farming at sea; building work to improve port structures; boat building and repairs; centres for the supply of nautical equipment; and, finally, include work in

transport sectors on land or at sea and in the control of fishing activities themselves.

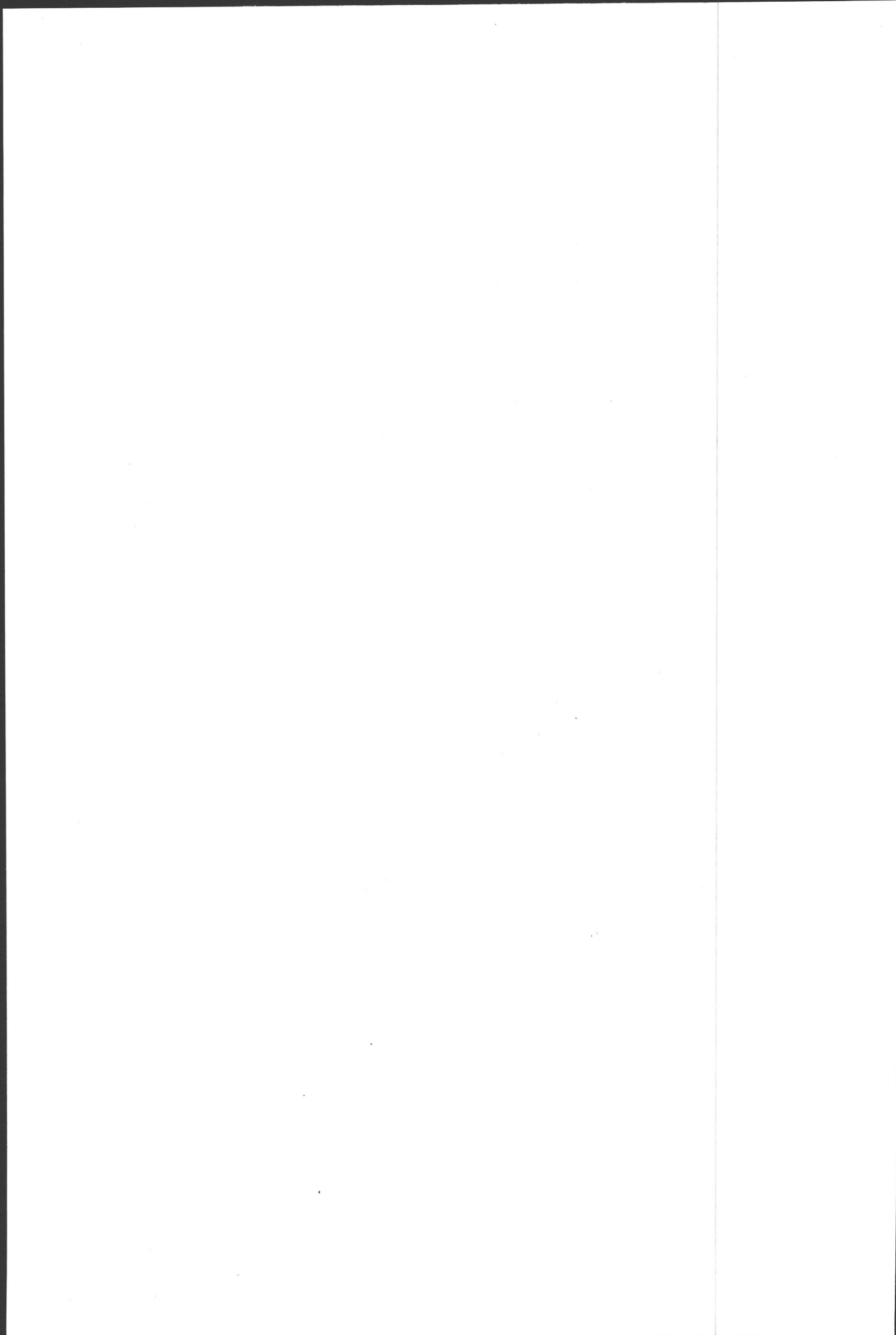
As regards reconversion programmes similar to those already approved for application in other sectors (see chapter 4), the need for these to be a combination of the above cited action should be stressed, aimed at reinforcing the productive fabric on both the demand-side and the supply-side.

It remains just to emphasise that any programme aimed at safeguarding employment in the fisheries sector in the area under study, and more generally, in Italy, must be conceived not just as a programme for the individual sector or geographical area, but must be implemented as an intersectoral programme.



## TABLES

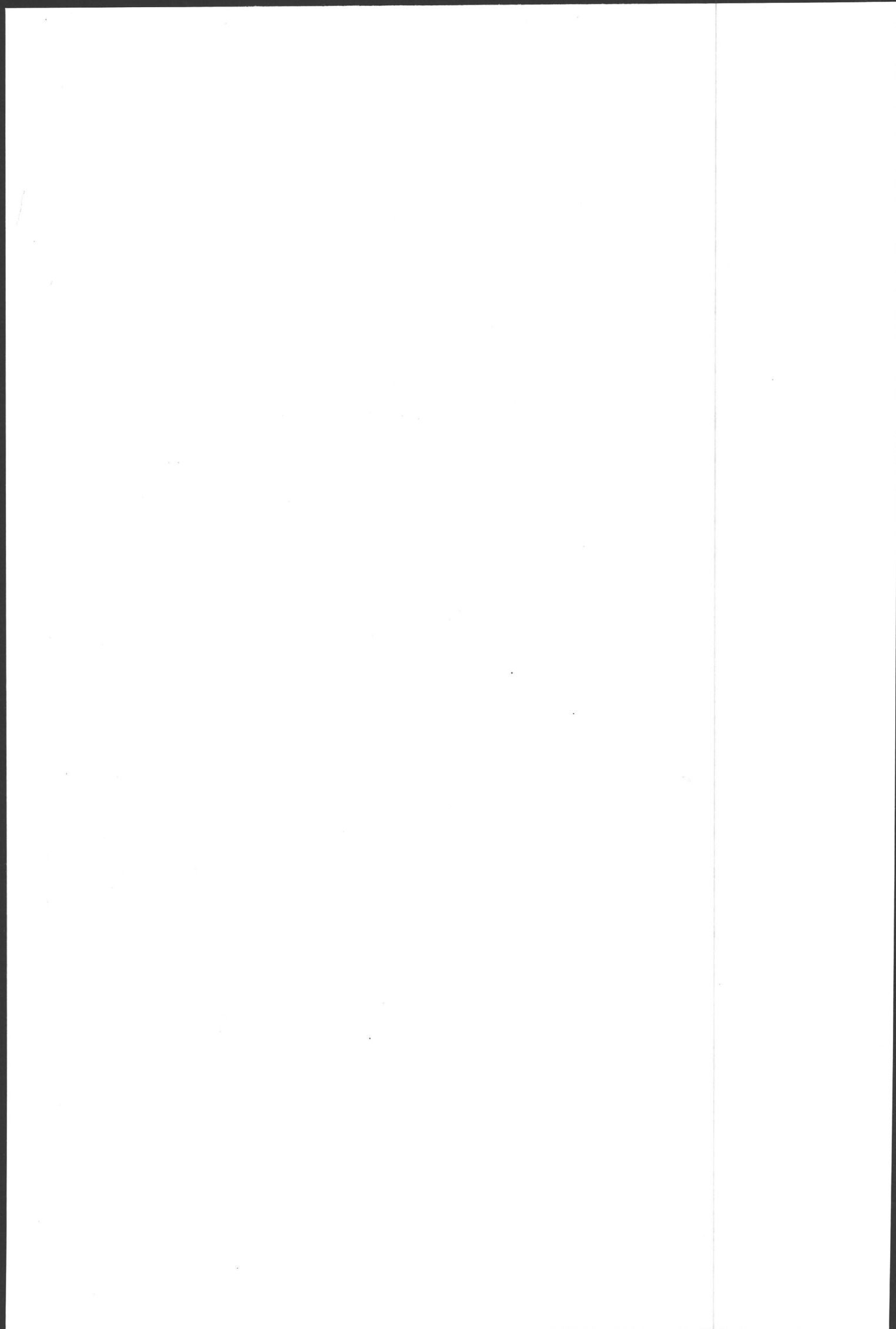
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APPENDIX 1

BRANCHES OF ACTIVITIES ECONOMICS IN THE INPUT-OUTPUT REGIONAL  
MATRIX

- 
- 1 AGRICULTURE AND FORESTRY PRODUCTS
  - 2 FUEL AND POWER PRODUCTS
  - 3 FERROUS AND NON-FERROUS ORES AND METALS
  - 4 NON-METALLIC MINERALS AND MINERAL PRODUCTS
  - 5 CHEMICAL AND PHARMACEUTICAL PRODUCTS
  - 6 METALS PRODUCTS EXCLUDING MACHINERY AND MEANS  
OF TRANSPORT
  - 7 MEANS OF TRANSPORT
  - 8 FOOD DRINKS AND TOBACCO
  - 9 TEXTILES AND CLOTHING, LEATHER, FOOTWEAR
  - 10 PAPER, PAPER PRODUCTS, PRINTING AND PUBLISHING
  - 11 RUBBER AND PLASTIC PRODUCTS
  - 12 BUILDING
  - 13 TRADE, LODGING AND CATERING
  - 14 TRANSPORTATION AND COMMUNICATIONS
  - 15 BANKING AND INSURANCE
  - 16 OTHER MARKET SERVICES
  - 17 NON-MARKET SERVICES
-

